SIMPLE MEASURES FOR THE BETTERMENT OF SOCIAL AND SELF HELP SKILLS AMONG THE SELECTED AUTISTIC CHILDREN

By

GAYATHRI IYYAPPAN

(07 PC 03)

A THESIS SUBMITTED TO THE

AVINASHILINGAM UNIVERSITY FOR WOMEN

COIMBATORE- 641 043

IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN HUMAN DEVELOPMENT

APRIL 2009

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CERTIFIED AS BONAFIED RESEARCH WORK

SIGNATURE OF
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SIGNATURE OF THE
HEAD OF THE DEPARTMENT

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INTRODUCTION

I INTRODUCTION

Autism is about having a pure heart and being very sensitive…
It is about finding a way to survive in an overwhelming, confusing world…
and it is about developing differently, in a different pace and with different leaps.
Stephen

Autism is a brain development physical disorder that prevents individuals from properly processing and integrating information from their senses and surroundings thereby impairs social interaction and communication, and causes restricted and repetitive behaviour. Autism is more recently referred to as Autism Spectrum Disorder (ASD), and it is a type of Pervasive Developmental Disorder (PDD). Autism is essentially the presence of significantly abnormal communication accompanied by restricted repertoire of social activities and interest that first gives signs during infancy or childhood and generally follows a steady course without remission or relapse.

Autism has a strong genetic basis, although the genetics of autism are complex and it is unclear whether ASD is explained more by multigene interactions or by rare mutations with major effects (Amen, 2001). Typically autism cannot be traced to a Mendelian (single gene) mutation or to a single chromosome abnormality. The large number of autistic individuals with unaffected family members may result from copy number variations (CNVs)-spontaneous deletion or duplication in genetic material during meiosis. Hence a substantial fraction of cases of autism may be highly "heritable" but not "inheritable", this is the mutation that actualizes that autism is not present in the parental genome.

All known teratogens (agents that causes birth defects) related to the risk of autism appear to act during the first eight weeks from conception and though this does not include possibility that autism can be initiated or affected

later, it is a strong evidence that autism arises very early in development. Environmental factors that have been claimed to contribute to or exacerbate autism, include- certain foods, heavy metals, solvent diesel exhaust, infectious diseases, phthalates and phenols used in plastic products, pesticides, brominated flame retardant, alcohol, smoking, illicit drugs and vaccines. Estimates of the prevalence of autism widely depend on diagnostic criteria. Most recent reviews tent to estimate a prevalence of 1-2 per 1000 for autism (Panda, 1999).

People with autism usually have these characteristics in common, to one degree or another, like poor understanding of social relationships, significant language and communication problems, high need for sameness, predictability, impaired thinking abilities, organizational problems, sensory and perception problems, uneven pattern of development, stereotype behaviour, restricted behaviour, self-injury, easily distractible and hyper activeness.

Some of the theoretical perspectives on autism are that the psychoanalytic view of autism is based on the theory of Sigmund Freud. According to this theory, autism is caused by a child's reaction to a family environment. The cause of autism was believed to lie in a mother's unconscious rejection of the child. The behavioural view of autism is that all behaviours can be understood as the function of the stimulation the individual responds to the environment. Behaviour is shaped by its consequences; rewards increase the frequency of the behaviour, and punishments decrease the frequency of the behaviour. The cognitive view of autism is based on the "Theory of Mind" (Baron-cohen, 2000). According to this theory, people with autism think differently than typical people. Specifically they do not understand that people have different point of view and internal processes. Rather they believe that everyone view things in the same way they do. The biological view is that autism is a biological disorder with psychological and behaviour symptoms. Many different theories fall within the biological view of autism, ranging from genetic to different brain anatomy to viral infection. All biological researchers believe that

autism is caused by something in the child's biological make-up and that the psychological and behavioural symptoms are a result of the child's biology. Biological interventions are based on changing the child's physiology, either through medication, diet or targeting physiological systems such as auditory processing. The environmental view holds that, a child may be born with a predisposition to autism, both for the disorder to become expressed, the child must come into contact with an environmental agent to which the child has an increased sensitivity. Genetics play an important role in autism the emphasis should be placed on environmental influences that trigger an expression of gene.

Language and social skills are the biggest challenges for most people with autism. Even the most mildly affected people with autism struggle with the complexity and abstraction of language. A person with severe autism may not understand the purpose of language. Social situations also confuse individuals with autism because of the many subtle cues and personal judgments involved in personal interactions. They show little or no interest in making friends. They neither imitate other's action nor interact playfully. Most of the autistic children avoid eye contact and do not smile at familiar people. Rimland believes that infantile autism is a neurological defect due to damage in brain caused by excess of oxygen in infancy (Marshall, et al, 2001).

The most widely used treatment and therapy for autism are based on certain conditions and criterias. They need a consistent and predictable environment and concrete ways to make sense of the world. An individualized learning programme is required, that is tailored to their unique learning style and builds on their strengths and interests. Most of all, early identification and intervention helps the child to be cured to a great extent. Even though there is no cure for autism, there are drugs, therapies, diets and other treatments that may help some children. Autism looks so different in each child that no one treatment for its symptoms works with everyone. Dealing with problem behaviour is one of the biggest challenges with autism. Because autism can range from mild to severe, similarly

behaviour problems also run the full spectrum. For a child with mild autism, behaviour difficulties may be primarily social such as repetitive questions or inappropriate laughing. For children more severely affected with autism, problem behaviours may include screaming, biting or even self-injury (Strong, 2005).

Many parents find that traditional child-rearing methods do not work very well for the behaviour problems unique to their children with autism.

- Identifying the underlying cause of the problem behaviour can often suggest possible solutions. A behaviour that comes mainly out of communication difficulties, for example, may be reduced if information is made clearer to the child and he is taught alternative, appropriate ways to communicate. Problem-solving a sensory issue, such as lowering the volume of the phone or removing scratchy labels from clothing, can go a long way toward reducing behaviour problems related to those sensations. Sometimes it is important and necessary to develop a specific support plan to address difficult behaviour. Support plans usually describe when, where and why the behaviour might be happening. Strategies might include social skills training, new communication tools, or step-by-step procedures for preventing and responding to aggressive behaviour. These support plan help everyone involved to deal consistently with the behaviour and that consistency, in turn, helps the child. Hence this study on "**Simple Measures For The Betterment Of Social And Self-Help Skills Among The Selected Autistic Children**" has been carried out to support and improve the social and self-help skills of autistic children. The main objectives of the study were to;
- improve self-help skills (like eating, bathing, brushing, dressing, and communicating) of the selected autistic children,
- increase the quality of life of autistic children,
- enhance autistic children's functional independence,
- help to reduce family distress, by making the autistic children more independent and
- promote children's socializing skills, verbal and non-verbal communication, so as to send the child to normal school, according to their intellectual age.

Operational definition : Autism is a brain developmental behavioural disorder, for which causative reasons are unknown, yet with some standard characteristics like stereotype behaviour, self-stimulating activities, delay in communicative and social development, a passion for sameness and hyper active.

Need for social skills in autistic children : Due to the peculiar characteristic actions, autistic children are labelled as incurable, socially withdrawn. But studies with proof hold the fact that with early intervention and intensive treatment measures. We can bring about desirable social changes in autistic children.

Intervention programme for autistic children : Autism is not incurable. Autistic children live in a world of their own. Through intervention programmes we have to open-up a bridge between the child's world and outside world. In most of the cases it's not that he does not want to socialize, but he does not understand socialization, i.e. he has to be taught practically the need for communicating, the need to understand that people have different point of views and also the need to understand social cues. He will have to be constantly and intensively motivated to bring out a desirable behaviour. The main points to bore in mind while intervening autistic children are persuade and motivate them to bring about a desirable behavioural change, do not force them instead go parallel to them. Keep them constantly occupied, so that they get less chance to indulge in self-stimulating activities. And allow the child to lead you, let him choose his way to change. The interveners should be guide and supporters not autocratic teachers to the children.

REVIEW OF LITERATURE

II REVIEW OF LITERATURE

The inability of children with autism to develop normal social skills is probably the most noticeable characteristic of autism. Most children with autism have extremely limited social skills and seems to live in a world of their own, separate from an unfathomable outsiders. Powers (1989) echoed that this inability to relate to the world of people is often the strongest clue to autism. Hence an attempt has been made to review the literature relating to "**Simple Measures For The Betterment Of Social And Self Help Skills Among The Selected Autistic Children**" under the following headings:

A. Autism- meaning, definition and demographic profile

B. Characteristics, developmental trends and problems of autistic children

C. Need for developing social and self help skills among autistic children

D. Intervention programmes for autistic children

E. Related research studies on developing social skills among autistic children

A) Autism- meaning, definition and demographic profile

- **Meaning**

The Swiss psychiatrist Eugan Bleuer coined the New Latin word 'autismus' (English translation autism) in 1910 as he was defining the symptoms of schizophrenia. He derived it from a Greek word "autos' –meaning self, and used it to mean morbid self-admiration. Later Kanner introduced the label early infantile autism in 1943. Autism is more recently referred to as "Autism Spectrum Disorder" (ASD), and is classified under the umbrella of "Pervasive Development Disorder" (PDD). Autism cannot be diagnosed by physiological symptoms or medical tests but rather is determined by how closely the child's condition fits certain criteria (Hamilton, 2000).

Autism is a brain development disorder that impairs social interaction and communication, and causes restricted and repetitive behaviour, all starting before a

child is three years old. Common way of distinguishing infantile autism from other PDDs is the age onset. If the onset of the disorder occurs earlier than 30 months, the child is considered autistic. The studies conducted by Kauffman (1995) shows that the on set is more frequent before the age of 30 months and after the age of 12 years than between those ages. Autism has strong genetic basis, although the genetics of autism are complex ASD is explained more by multigene interactions or by rare mutations. In rare cases, autism is strongly associated with agents that cause birth defects.

- **Definitions**

"Autism means a developmental disability significantly affecting verbal and non-verbal communication and social interaction, generally evident before three years that adversely affect the educational performance. Autism children are engaged in repetitive activity, stereo type movements, resistant to environmental changes or daily routine and unusual responses to sensory experiences", (U.S. Department of Education, 1991). American Psychiatric Association (1997) defined autism as essentially the presence of significantly abnormal communication accompanied by a restricted repertoire of activity and interest.

Autism is a brain development disorder that first gives signs during infancy or childhood and generally follows a steady course without remission or relapse. Impairment results from maturation related changes in various systems of the brain. Autism is one of the five PDD, which are characterized by widespread abnormalities of social interactions and communications and severely restricted interests and highly repetitive behaviour. The terminology of autism can be bewildering with autism, Asperger syndrome and PDD, is often called the ASD, or autistic disorders or infantile autism. The manifestation of autism covers a wide spectrum, ranging from individuals with severe impairments- who may be silent mentally disabled and locked into hand flapping and rocking to less impaired individuals- who may have active but distinctly odd social approaches, narrowly focused interests, verbose and pedantic communication. Sometimes the syndrome

is divided into Low Functioning Autism (LFA), Medium Functioning Autism (MFA), and High Functioning Autism (HFA). Based on IQ threshold, or on how much support the individual requires in daily life, these subdivisions are not standardized or are conventional. Autism can also be divided into Syndromal Autism and Non Syndromal Autism, where the former is associated with severe or profound mental retardation or a congenital syndrome with physical symptoms, such as tuberculosis (Michal,et al, 1989).

- **Demographic profile**

Population surveys of autism can be based on certain behavioural criteria. This may seem arbitrary at first, since one can only speak of an identifiable syndrome. It can also tell us to what extent symptoms vary between individuals, which symptoms can or cannot be reported reliable, and which are earliest diagnostic signs. Hence Radhakrishnan et al, (2004) viewed that facts collected in a large-scale survey are an essential complement to detailed facts about the prevalence. Estimates of the prevalence of autism vary widely depending on diagnostic criteria, age of children screened and geographical location. Most recent reviews conducted by Rubin et al, (2006) tend to estimate a prevalence of 1-2 per 1000 for autism and 6 per 1000 for ASD. A 2006 study reported a prevalence of 3.89 per 1000 for autism and 11.61 per 1000 for ASD. Autism is the fourth most common developmental disability; only mental retardation, epilepsy and cerebral palsy occur more frequently. Powers (1989) pointed out that children with the most severe form of this disorder probably make up only about 2-3 percent of children with autism.

The excess of autistic boys over girls was noted by both Kanner and Asperger and is now well established. Lord, Schopler and Revicki carried out a study which threw new light on this area. Their study reports from one of the largest samples of autistic children collected: 384 boys and 91 girls aged three to eight. The ratio of boys-to-girls was 5:1 at the highest end of the ability range and only 3:1 at the lowest end. According to statistics studies of American Psychiatric

Association (2006), boys are affected more with autistic disorder than girls with an averaging male-to-female ratio of 4.3:1. Autism occurs four times more frequently in boys than in girls. There is some indication that autism is more common in first born boys, but there has been no conclusive study to date and not enough research available to know for sure. Girls when affected are likely to be more seriously disabled and to have lower IQs (www.nationalautismcenter.org).

The autistic girls were on the average, more seriously impaired on almost every ability tested, than the autistic boys. The girls had an average non-verbal IQ of 40 and the boys of 44, both of which are quite low. Though only there are few points different, these averages nevertheless indicate a significant shift, since they are based on sizeable groups. Similarly girls came out worse when simple daily living skills were assessed, and were worse on language or perceptual tests. However, in terms of play or affect, or the ability to relate to people, girls were as poor as boys, but not worse than boys. An important finding by Uta Frith (1999) was that the particular features of autism are relatively independent of intellectual abilities and acquired skills. It would not be right to think of girls in this study as more autistic than boys. Instead they seem to have severe additional problems. The excess of boys found consistently in all studies and the scarcity of girls at the middle and higher ability levels are typically due to biological origin of autism. Recent reports from the centers for disease control and prevention (CDC) indicate that ASD are more common among youth in the United States. Large-scale CDC studies in 2006 at U.S. communities and in 2002 of 14 U.S. communities found that approximately 1 out of 150, 8-year-olds in these regions had an ASD. For decades, it was presumed that only 1 in 2,500 American children had ASD.

B) Characteristics, developmental trends and problems of autistic children

- **Characteristics**

According to OAR- Organization for Autism Research some of the characteristics of autism are:

- need for sameness
- problematic act-out behaviour
- easily distractible
- sensitive to touch (rough surface, watery surface, touch or caressing of man, hugging, kissing, sweat)
- sensitivity to smell (wet shoes, hand lotion, musty locker, rubber cement, blood smell)
- sensitivity to sounds (air conditioner, shuffling of feet, scratching of pencils, certain tones of music)
- sensitivity to light, particularly fluorescent lights, Maloney et al, (2004).

Some of the symptoms of autism that Powers (1989) studied in an autistic child were that of failure to develop normal socialization, do not interact with others, appear to live a life of extreme isolation, disturbance in speech, language and communication; abnormal relationship with object or events like spinning an object or rocking the body; if this object or event is being removed or hindered they may get violent or end up in self-injurious activities, abnormal responses to touch, smell, light and sound, developmental delays and differences from normal child growth. Powers's studies say that 40% of autistic children do not have speech at all and others have echolalia (parrot like speech). They do not understand abstract concepts like danger and separation. They have a vague concept of pronouns like "I and You". The voice of the autistic children may be flat and monotonous.

According to Strong (2005) poor understanding of social relationships, poor eye contact, limited play, inadequate social interactions and preference of

being alone are also the characteristics of autism. It is hard for them to understand social cues such as facial expressions, body language and the feelings of other people. Autistic children have significant language and communication problems. Studies show that about 40% of people with autism do not speak. For those who do, language is slow to develop, unusual speech patterns and repetitive phrases, questions and topics, difficulty in understanding instructions or language out of context, need extra time to think about the words they have heard or said and to act on them. It may be hard for them to communicate their needs. They show high need for sameness and predictability. People with autism may become upset with changes in the environment, schedules and the people around them, easily confused and often develop elaborate rituals to organize themselves, have a limited number of interests and activities (www.springerlink.com). Autism children have problems with judgment and understanding the meaning of things, unable to see the whole or how the parts fit together, hard for them to separate what's important from what's not, making choices can be troublesome, generalization is often a challenge, (for example, a child may be able to tie his or her shoes at home but not at school) very difficult to grasp abstract concepts such as clean-vs.-dirty, have difficulty with beginnings and endings, have trouble putting tasks in order and figuring out what comes next (Strong, 2005).

The other characteristics viewed by Strong (2005) are people with autism often have inconsistent and unusual sensory responses and perception problems, over or under-reactive, stare at lights, lick or smell things, and be attracted to or repelled by certain textures (especially in food), distracted by sensory information and unable to filter out the unimportant details. Typically, the skills of a person with autism are scattered, may do some things well and others not at all, may be able to read but unable to talk. Social impairments become apparent early in childhood and continue through adulthood, they show less attention to social stimuli, less response to even their own name, toddlers have more striking deviance like- less eye contact, anticipatory postures and likely to communicate by

manipulating other person's hand, less likely to exhibit social understanding, imitate emotions, verbal and non-verbal communication meaninglessly. Certain other characteristics pointed out by Domnick et al (2006) are:

- stereotype behaviour- is apparently purposeless movements such as hand flapping, head rolling or body rocking,
- compulsive behaviour- is intended and appears to follow routine regularly followed,
- sameness- is resistance to change,
- ritualistic behaviour- involves the performance of daily activities in the same way in the same pattern
- restricted behaviour- is limited in focus, interest or activity, such as interest in a single TV programme and
- self injury- includes movements that injure or can injure the person, banging head, biting etc.

- **Developmental trends**

Language development-A study of children with autism suggests that their language development may be abnormal from two months of age, may not babble at all, may show less variety in their sounds or may make primarily high-pitched squealing sounds. Delay in language development is readily apparent by 12 months of age, not learned any words, they cannot be coaxed into imitating sounds. At two lose the use of those few words he may have previously acquired, By the age of four and five begins to make slow progress in language development, probably have only a limited ability to use them to communicate. At four years of age, only about a quarter of children with autism can use speech meaningfully. More than half of all children with autism still have no useful speech by this age, while an additional 25% are echolalic- they can parrot other people's words, but without understanding (Uta Frith, 1999). Young people with autism may eventually develop near normal speech, and find their ability to

communicate, hampered only by an odd lack of voice inflection that makes their speech sound somewhat mechanical (Kaufman, 1994).

Social development- In Kaufman's (1994) observation most children (roughly 2 out of 3) do not actually begin to withdraw until around two years of age but shows other social developmental abnormalities. In the first few months child would not have reached to be picked up or he never smiles. At one year of age child may stiffen when held and seemed completely uninterested in playing baby games. The child shows little or no separation anxieties when left him alone or with strangers. At two years child begins to withdraw from outside world and engage in self-stimulation behaviour like hand flapping, whirling or staring. In most cases the social behaviour of the child with autism takes a turn for the better beginning around the age of four. As they enter adolescence, most young people with autism become more flexible and respond considerably to their environment. Other problem areas in social development exhorted by Greenough (2001) are aggression, tantrums and self-injury. But hyperactive behaviour and self-stimulation tend to decline as the child gets older, but not in aggression and self-injury

Cognitive development- Most children with autism have intellectual abilities that are well below average. About 70% of them are mentally retarded while only 30% are of normal to above average ability. Uta Frith (1999) expressed that a child with autism who is not mentally retarded may be quite proficient at limited basic academic subjects, but still speaks in a peculiar fashion and be very limited in his ability to negotiate the emotional world of childhood.

- **Problems of autistic children**

Turnbull et al, (1999) suggested that children with autism, become quite upset about even for minor changes in their routine or environment. The way the child responds to the change confusion may involve a variety of bizarre behaviours such as self-injury and toileting accidents. We cannot guarantee the same environment all throughout the life. Hence they need help to develop social

skills to become more flexible to the environment. One reason that children with autism need help for developing social skill according to Jennifer and Gargiulo, (2000) is that they have trouble using the same skill with different people, places or situations. This inability to use the same skills in different areas is called poor generalization. According to Powers (1989) behaviour problems in autistic children are:

- delay in acquiring self help skills
- eating pattern (only eats a few foods or will resist to use utensils)
- sleeping pattern (wakes often at night or have trouble falling asleep)
- toilet training problem
- self-stimulation (rocking, waving hands, flips object in front of the eyes)
- self-injury
- tantrums
- withdrawal (not responsive to other people)
- aggression (injures others when frustrated)
- echolalia
- pronoun reversal (say you for I)
- jargon in speech (make up meaningless words) (Powers, 1989)
- aloof, cold and unresponsiveness
- neurological defects (Mchelman et al, 1984)
- unable to establish relationship with people (Rimland, 1964)
- sameness (Stone et al, 1999)
- unaware of other's existence (Barkely, 2000).

C) Need for developing social and self help skills among autistic children

The inability of children with autism to develop normal social skills is probably the most noticeable problem of autism. This inability to relate to the world of people is often the strongest clue to autism as defined by Powers (1989). Volkmar (2000) echoed that autistic children need to develop social skills for a considerable sophisticated social competence. To an extent they will have to

understand the difference between posing or acting and real meaning of it. The loneliness of the autistic child is something-different altogether. He stressed the importance of teaching self-care and simple daily living skills (road safety, health care and domestic skills) for autistic children. It is often remarked that autistic people have no sense of personal modesty, shame, or guilt. They find social taboos hard to understand, so that behaviour in public tends to remain same as in private. Hence we have to direct many specific lessons to instilling social dos and don'ts in autistic children. Some of the perceived abnormalities of autistic social behaviour can be seen not so much as impairments, but as unusual positive qualities. These qualities can be captured by terms such as innocence, honesty and guiltlessness. Autistic people are not adept at deceiving others, or at impressing others. Since they often do not have a strong feeling for possession, they are not envious and can give to others gladly. Autistic people may not empathize in the common sense of the word (Neil O'Connor 2001). There is a danger that they are forgotten when one talks of profound social impairment of autistic individuals. The nature of this impairment is not a simple global lack of social responsiveness. The egocentrism shown by the autistic child is not at all like the egocentrism of the calculating manipulator; it has instead the same innocence as the egocentrism of the normal infant (Guillberg, 1998).

Holtz et al (2004) stated that, the professional making of the diagnosis paid special attention to the child's social interaction skills. It is usually found that they lag behind in the development of both elementary and complex social skills. Most children with autism learn social skills only through formal teaching. Some examples of social skills that are taught to children with autism include engagement with a task, greeting others, independent play skills, waiting turns and in following directions.

Self-help skills represent those activities of daily living that all people need to participate as fully and independently as possible in their families and communities. Learning through watching and imitating is very hard for children

with autism, so these skills often must be taught systematically. To acquire these important skills, children with autism require consistent teaching-teaching that should take place both at home and in school in the context in which they occur naturally. Examples of self-help skills that can be taught in school include dressing and undressing, using toilet, grooming/ personal hygiene, care of one's own belongings and eating skills (Holtz et al, 2004). Most individuals with autism require some degree of support throughout their lives. The intensity of this care will vary from person to person; it may range from 24-hour supervision to monthly care management. Myles et al (2005) precisely pointed out that, research is needed on how to provide the best support possible to individuals with autism. Many issues including the education and credentialing of professionals working with individuals with autism how to access medical care acquire systematic attention. According to Anderson et al (2006), the primary step in teaching self help skills for autistic children is breaking complex skills into smaller steps for learning.

D) Intervention programmes for autistic children

Early intervention programmes provide special education for children younger than three, with the goal to minimize the effects of the handicaps that can delay development in infants and toddlers. Early intervention specialists use specific therapeutic and educational techniques to help children with disabilities master skills they are having trouble learning; they also teach the parents how to help their child master these skills and maintain them over time. Powers (1989) expressed the fact that children with autism can benefit from early and intensive training in communication, cognitive and social skills. Sooner the most children with autism begin work to overcome behavioural problems such as tantrums and self-injury, the less likely these behaviours are to interfere with future learning. Very young autistic children are typically offered one of the two types of programmes: home-based or school-based. In home based programmes, members of an early intervention team come to home to work with the child. How many

teachers or therapists visit and how often they visit depends upon child's need. During the visit the teachers will work with the child focusing on different areas of development. Particular emphasis should be given to the areas like socialization, communication and cognitive skills. The teacher may leave the parents with suggestions of activities to try with the child until the next session.

Older children require more teaching time and much more intensive programming than is available in a few hours of home visit. For these reasons school based programmes will be appropriate for an autistic child after two years of age. Teachers who have special knowledge about working with autistic children should staff school-based programmes. The student to teacher ratio is also very important. A ratio of 3 children to 1 staff member is often appropriate, but the ratio should generally be determined by the child's needs (with a ratio ranging from 1:1 to 6:1). Too much supervision may prevent the more competent child from learning the skills needed to become independent; too little supervision of more challenging children may mean insufficient opportunities to practice skills, as well as insufficient teacher's time to intervene with behaviours such as tantrums, self-stimulation or self-injury (Egan et al, 1999).

Attwood (1998) viewed classrooms in school based intervention programmes for children with autism age 2 to 4 usually resemble those for other preschool age children, with toys, a house keeping area and materials to stimulate large and small muscle development. In addition, a variety of toys and materials appealing to the sensory interests of children with autism might be available. The classroom should also contain areas for large group activities, small group instruction and free play. School-based teachers often involve the parents in their child's education. Frequently parent education services are provided to teach parents how to help their child use skills or behaviours at home that she has learned in school.

Related to early diagnosis is early intervention. According to a report from the National Research Council, prompt educational intervention is the key to help children with autism. Learn the skills needed for self-care, school success and community functioning. There is, at present, some research to support early interventions based on the principles of Applied Behavioural Analysis (ABA), but beyond this, the evaluation of intervention lacks scientific validation. NIH (2002) held a workshop in which the leading researchers in psychosocial interventions for autism discuss their plan for conducting more rigorous scientific research into the best methods of early interventions. The most common myth about children with autism is that they do not have the ability, motivation, or desire to establish or maintain meaningful relationships with others. There is no doubt that children with autism have social deficits and communication delays, which makes them difficult for socialization. However with appropriate assistance, children with autism can engage with peers and establish mutually enjoyable and lasting interpersonal relationships. Maloney (2004) clearly stated that social skills, behaviour, and objectives should be part of the intervention programme and it should be assessed regularly. He added, that the below listed means are the other aspects of the intervention programme:

- promote the acceptance of the child
- plan programme outside the classroom for the unstructured time. Create circle of friends to be with and interact with autistic children even out of classrooms
- plan sense oriented experiences for autistic children
- follow a regular pattern in teaching and inculcate change in a slow but steady pace
- children with autism have their own way of communicating; it's like a different language. The teacher should be able to grasp the cues of each child
- create a social environment in which positive interactions between children with autism and his or her typically developing peers are facilitated throughout the day

- educate the typically developing peer about the child's disorder
- prepare them for a child with autism by joining them in classes like "autism vision: creating classroom connections".

E) Related research studies on developing social skills among autistic children.

A 2004 British study of 68 adults who were diagnosed before 1980 as autistic children with IQ above 50 were found that- 12% of them achieved a high level of independence as adults, 10% had some friends and were generally in work but required some support, 19% had some independence but were generally living at home and needed considerable support and supervision in daily living, 46% needed specialist residential provision with a high level of support and very limited autonomy and 12% needed high level hospital care (www.autismresearchnetwork.org). A 2005 Swedish study of 78 adults that did not exclude low IQ found worse prognosis. Only 4% of them achieved complete independence (www.autism_society.org). A 2008 Canadian study of 48 young adults diagnosed with ASD as preschoolers found outcomes ranging through poor (46%), fair (32%), good (17%) and very good (4%); only 56% have ever been employed, most in volunteer, sheltered or part time work (www.autism_society.org).

In Shermann et al's (2006) study, LEGO(C) building materials have been adapted as a therapeutic modality for increasing motivation to participate in social skills intervention, and providing a medium through which children with social and communication handicaps can effectively interact. A 3 year retrospective study of long-term outcome for autistic spectrum children participating in LEGO(C) therapy (N=60) compared Vineland Adaptive Behaviour Scale socialization domain (VABS-SD) and Gilliam Autism Rating Scale social interaction sub-scale (GARS-SI) scores pre and post-treatment with a matched comparison sample (N=57) who received comparable non-LEGO(C) therapy. Although both groups made significant gains on the two outcome measures,

LEGO(C) participants improved significantly more than the comparison subjects. Diagnosis and pre-treatment full-scale IQ scores did not predict outcome scores. Results are discussed in terms of implications for methods of social skill intervention for autistic spectrum disorders.

Loftin et al's (2007) research indicated that students with autism have difficulty initiating social interactions and may exhibit repetitive motor behaviour (e.g., body rocking, hand flapping). Increasing social interaction by teaching new skills may lead to reductions in problem behaviour, such as motor stereotypes. Additionally, self-monitoring strategies can increase the maintenance of skills. A multiple baseline design was used to examine whether multi-component social skills intervention (including peer training, social initiation instruction, and self-monitoring) led to a decrease in repetitive motor behaviour. Social initiations for all participants increased when taught to initiate, and social interactions continued when self-monitoring was introduced. Additionally, participants' repetitive motor behaviour was reduced. Changes in social behaviour and in repetitive motor behaviour maintained more than one month after the intervention ended.

This is the first report from a large multiple baseline single-subject design study of children with ASD. This brief report examines effectiveness of teaching a social thinking approach to six males with Asperger syndrome (AS) or High Functioning Autism (HFA). Data included are restricted to pre- post-treatment comparisons of verbal and non-verbal social behaviour. Structured treatment and semi-structured generalization sessions occurred over eight weeks. Results indicated significant changes from pre- to post- measures on both verbal/nonverbal "expected" and "unexpected" behaviours, significant increases in the subcategories of "expected verbal", "listening/thinking with eyes", and "initiations", and robust decreases in the subcategories of "unexpected-verbal" and "unexpected-nonverbal"Crooke et al, (2007).

Harper et al's (2007) research supported that children with autism face enormous struggles when attempting to interact with their typically developing

peers. More children are educated in integrated settings; however, play skills usually need to be explicitly taught, and play environments must be carefully prepared to support effective social interactions. This study incorporated the motivational techniques of Pivotal Response Training through peer-mediated practice to improve social interactions for children with autism during recess activities. A multiple baseline design across subjects was used to assess social skill gains in two elementary school children. The results demonstrated an increase in important social skills, namely social initiations and turn taking, during recess. According to the study, published in the journal of Social Neuroscience, inefficient pathways for transmitting information between certain brain regions are to blame. The research implicates abnormalities in the brain's inter-regional communication system, which connects the gray matter's computing centers. The study is the first to measure the synchronization between the brain areas that make up the Theory of Mind (TOM) network, which is responsible for processing the intentions and thoughts of others. It is also the first to provide such concrete evidence of faulty social network connections.

Researchers asked 12 high-functioning adults with autism and 12 control participants to view animations of interacting geometric figures. Participants were asked to select the word from several choices that best described the interaction. The control subjects were consistently better at inferring the intention from the action than the participants with autism. The findings have the potential to guide the development of theoretically based interventions for autism that could target this particular shortfall; for example, by focusing on games and activities that would strengthen the connections (Yovorcik, 2008). Yoder (2007) studied on 35 children who were diagnosed with ASD, below the age of 36 months. The autistic children belonged to middle to high socio economic group status. Parents were taught to implement various interventions. The socio-communication intervention called Early Social Intervention (ESI), were taught to children to identify the child-parent relationship. And parent child playgroup was practiced for 12 months. The parents were provided information on how to use existing routine activities to

promote and reward the child's target behaviour seeing typical naturalistic teaching method.

One hundred and fifty seven participants were chosen and 55 were studied by Schwartz,et al (2007) and concluded that generally consistent with previous social skill intervention meta-analysis. Systematic review was well conducted and along with the study. This review focus on a seminal issue in schools today and the authors are to be commented for addressing the issue. Parents are often at odds with the administrators or school policy and practice as to whether or not the most efficacious environment produces the most positive result with respect to the child's social skill development. Certainly the view that more typical the role model, the more likely it is that the child with ASD will learn appropriate social behaviour, makes intuitive sense. Rarer still is the inclusion of the child with autism's choice of playmate when participants are selected for social skill programmes. They used a replicated AB design to evaluate the generalization to the playground of selected social skills taught in a brief programme conducted in an early intervention centre. Results indicated that children with autism can identify preferred peers and when mutually selected pairs of children with autism participate in a social skill programme as an addition to their ongoing participation in early intervention increased in skill can be observed in the generalization setting. Increases in specific skills however are not consistent with children (Smith et al, 2004).

The CARS (childhood autism rating scale) was factor analysed by Netherland (2004) to determine if distinct and independent "subgroups" of symptoms could be derived which would be consistent with the current multidimensional theory and nosology of autism. To address this issue, the CARS was factor analysed for a sample of 90 children with diagnosis of autism, based on DSM-111R diagnostic criteria five factors emerged were, social communication, emotional reactivity, social orienting cognitive and behavioural consistency and odd sensory explosions. Factors based scores were examined to determine the

degree to which they are associated with individual differences (such as age, IQ, gender, history of regression and history of abnormal EEGs) among children with PDD. The application of these distinct and independent factors may have important clinical research implications. The generation of factor based scale may provide information of nature of the individual difference that is thought to be present in children with autism. Additionally the use of factor based scale scores may increase the sensitivity of the CARS for identifying individuals with PDD spectrum.

This review provides a summary of research on behavioural interventions for children with autism, 8 years or younger, established between 2002-2006. The analysis is divided into four sections (1) emerging themes in the technology of behaviour support (2) a review of existing research synthesis focusing on behaviour interventions (3) a new literature review of current pertinent research and (4) an evaluation discussion on the synthesis results and field's future to develop effective behavioural interventions for young children with autism. The authors offer recommendations for strengthening the existing research base and advancing behavioural technology to meet the need of the defined target population (Netherlands, 2007).

Scudder et al (2007) examined the use of virtual reality (VR)—3-D interactive environments—in teaching fire and tornado safety skills to students with ASD. VR training first involved watching a virtually guided building tour that included sight and sound cues of a fire and a fire alarm and the scent cue of smoke. Gradually throughout the safety-training period, cues were removed, and ultimately, children were asked to virtually navigate the building with only a fire alarm cue. A separate set of children with ASD took part in safety lessons based on an integrated/visual treatment model. After safety training, children with ASD from both groups were observed during real-life school safety drills. Both methods were found to be effective. These results suggest that children with ASD are able to transfer learning effectively from the virtual world to the real world.

Losh et al (2006) have been trying to understand how children with high-functioning autism (HFA) interpret emotional situations. In a recent study, researchers asked children with HFA to describe times they experienced simple emotions—happiness, sadness, anger, fear, and disgust. They were asked to provide examples of when they experienced complex emotions such as shame, doubt, pride, curiosity, and surprise. The group of children with HFA could provide detailed examples of occurrences of simple emotions, but had trouble giving examples of times they dealt with complex emotions. Results of this study suggest that children with HFA have a unique way of encoding and recalling complex emotional events. In conclusion, children with HFA may primarily remember aspects of an emotional event that typically developing people would view as irrelevant, and fail to recall the event's meaningful emotional undertones.

Children with autism are less likely than typically developing children to engage in joint attention behaviours that involve interaction with another person around an object, idea, etc. (i.e. pointing). Recent research suggests that children with autism can engage in joint attention, but choose not to because they do not view simply connecting or sharing social experiences as rewarding or motivating. What they do find motivating, though, are their own extremely strong interests in a certain topic or activity. Parents of children in this study were trained to use Pivotal Response Treatment (PRT). PRT involves a caregiver following a child with autism's lead in play behaviour, varying tasks to maintain the child's interest, and rewarding the child for social interaction during play. These results show that motivation is an important aspect in increasing joint attention behaviours in children with autism. This research provides us with important knowledge for intervention: by using PRT techniques and by using children's strong interests in play, parents may be able to increase their children's sharing of social experiences and decrease social avoidance. (Vismara et al, 2007).

Children with autism are poor mind readers; they have limited understanding of the role that mental stages play in determining emotions and

behaviour. In the research conducted by Carolien et al (2004), 23 high-functioning children from autism spectrum, 42, 6-year old controls and 43, 10-year old controls were presented with six emotion-evoking stories and asked to explain protagonists typical and atypical emotions. Their explanations demonstrate that children with autism indeed have the capacity to read mind, although they do not use this capacity in the same way as normal children use.

Thus the reviewed related literature threw light on the various aspects of autism and helped the investigator to have a clear way for the research.

METHODOLOGY

III METHODOLOGY

Autism in children is one of the most severe forms of emotional disturbance. This is also known as childhood schizophrenia. This condition is presented with and is followed by severe withdrawal of contact from other people, an intense need to preserve sameness, an inability to deal with people, apparently good intellectual potential and severe disturbance of language functioning. Hence the study has been carried out to help the selected autistic children to develop in them social and self help skills. The methodology adopted for the study includes:

- Selection of the area
- Selection of the sample
- Selection of the tools
- Formulation of monograph
- Conduct of the study and analysis

1) Selection of the area

The selected area to conduct the study and to give training for autistic children was, "**ICCONS (Institute for Communicative and Cognitive Neuro Sciences),** Sree Chithra Thirunal Institute for Medical Science and Technology,Ulloor, Thiruvananthapuram-695011", for the possibility of the researcher to approach the authorities to get their concern to conduct the study.

2) Selection of the sample

The sample for the study comprised of 30 children, which were categorized into experimental group with 10 children and the remaining 20 children as the controlled group. These 30 children are in the age group of 4-28 years. The experimental group was chosen based on the severity of autism and age i e judgement sampling, based on the judgement of the researcher, the sample units are selected based on the relevance (Vijayalakshmi and

Sivapragasam, 2008). Thus these 10 children who were treated as experimental group are in the age group of 7-14 years.

3) Selection of the tools

To assess the severity of autism and to know about the family, health and behaviour background of the selected autistic children, two tools were selected. They were rating scale and check list.

- **Rating scale :** Rating scale involves qualitative description of a limited number of traits of person, and such judgements may be quantified (Vijayalakshmi and Sivapragasam, 2008).

- **Childhood autism rating scale (CARS) :**The CARS was formulated to the present form by Schopler et al (1993), at the western psychological services, Los Angels. CARS consist of 15 items where the observer should give in detail about the characteristic of the child, based on the particular area. The instructions for the CARS is based on the principle of (BARS)-Behaviourally Anchored Rating Scale (Given in Appendix-A).

The CARS was chosen for this study because it is considered golden standard in the field (Matson et al., 1998). Development of the CARS began in 1966 with the production of the scale that incorporated the criteria of Kanner (1943) and Creak (1964), and characteristics symptoms of childhood autism (Schopler et al., 1980). The 15 items in CARS are (Renner et al., 1988) 1) relating to people 2) imitation 3) emotional response 4) body use 5) object use 6) adaptation to change 7) visual response 8) listening response 9) taste, smell and touch response and use 10) fear or nervousness 11) verbal communication 12) non-verbal communication 13) activity level 14) intellectual response 15) general impression.

Each scale was rated with a score ranging 1,2,3,4, and also with mid scores 1.5, 2.5 and 3.5. The scoring criteria are:

Score	Behaviour characteristics
1	Normal child
1.5	Characteristics between normal and mild autism
2	Mildly autistic
2.5	Characteristics between mild and moderate autism
3	Moderately autistic
3.5	Characteristics between moderate and severe autism
4	Severely autistic

Total CARS score ranges from 15 to 60, with score of 30 serving as the cut off score for the diagnosis of the autism. This scale was used for both controlled and experimental group.

- **Check list :** It is a prepared list of items, the presence or absence of the item may be indicated by checking yes or no, (Vijayalakshmi and Sivapragasam, 2008).

- **The Autism Research Institute Form E-2 Check list :** This tool consists of the selected questions from the checklist formulated by Bernard Rimland (Waltz, 2002). The questions cover the whole history of the child, covering the family and medical history, behaviour characteristics, developmentally delayed milestone and social and self help skills. Form E-2 is not a diagnostic tool. Its purpose is to build a large, detailed database on autism related symptoms and behaviours of autistic children (Given in Appendix-B). This checklist is used for all the selected 30 autistic children, before the conduct of the intervention programme and as a supporting tool for the CARS.

- **Intervention programme**

The investigator conducted intervention classes for the experimental group to enhance the basic social and self-help skills, through one-to-one individualized approach, for a period of 40 days (200 hours). The time duration of each session for one child was chosen considering the attention span of the

children. The test items used for the intervention programme and sessions conducted by the investigator are shown in Plates 1 and 2 respectively.

4) Formulation of monograph

The purpose of the preparation of monograph is to highlight the main aspects of this research study. The components of monograph are the meaning, characteristics, difficulties and strengths of autistic children. A comprehended content on learning atmosphere needed, help required, treatment and therapy for autistic children are also given. Dealing with behaviour problem and measures to cope up by the family with autistic children is enumerated in the monograph. An outline of the intervention programme conducted is also given under the headings- methods adopted, social and self help skills taught and aids used for the sessions (Enclosed in Appendix-C).

TEST MATERIALS USED FOR INTERVENTION PROGRAMME CONDUCTED FOR THE SELECTED AUTISTIC CHILDREN

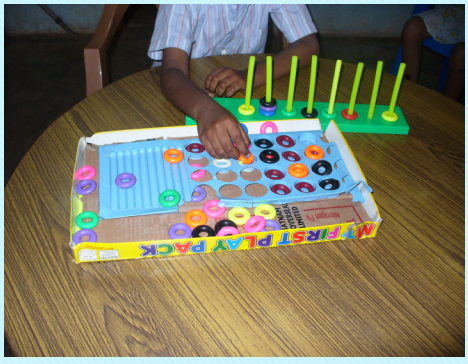
Touch tablets

Geometric cards

Buttoning boards

Geometric jigsaw

Parts of human body



Counting rings

PLATE 1

ACTIVITIES FOR THE PROMOTION OF SOCIAL AND SELF HELP SKILLS AMONG THE SELECTED AUTISTIC CHILDREN

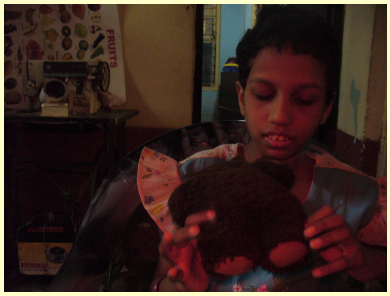
Combing by self

Dressing by self

Pouring & drinking from glass

Brushing by self

Choosing activity of interest



Responding to name call

Sociable

PLATE 2

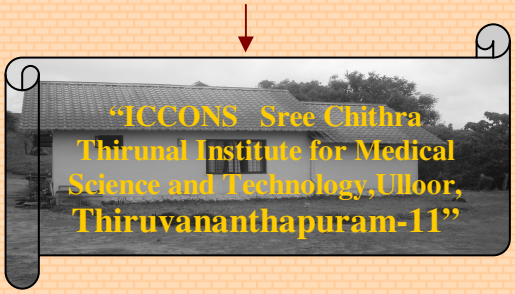
5) Conduct of the study and analysis

- Authorities of the ICCONS institute Trivandrum were approached, purpose of the study was explained by the investigator
- 30 autistic children were chosen
- The 30 selected autistic children were rated using the tools CARS and E-2 Check list
- The 10 selected autistic children of the experimental group were provided with the intervention programme on basic social and self help skills, for 40 days (200 hours)
- The 30 autistic children were again rated using CARS, after the intervention programme, to know the effect of the intervention class
- Collected data were coded, consolidated, tabulated, statistically treated using the students 't' test and the results are analyzed in the next chapter

The research design at a glance is depicted in Figure 1 to give a clear idea about the outline of the study conducted.

RESEARCH DESIGN AT A GLANCE

AREA



SAMPLES

TOTAL	*EXPERIMENTAL*	*CONTROLLED*
		
30 Children **4-28 years**	**10 Children** **7-14 years**	**20 Children** **4-28 years**

TOOLS

- **Childhood autism rating scale CARS** → *Used for both experimental and controlled group before and after the intervention programme*
- **The autism research institute form E-2 check list** → *Used for all the 30 selected autistic children before the intervention programme*
- **Formulation of monograph**
- **Intervention programme for 40 days- 200 hours** → *Conducted for experimental group*
- **Statistical analysis- 'Students 't' test'**

FIGURE 1

RESULTS AND DISCUSSION

IV RESULTS AND DISCUSSION

The attainment of very basic social cues and self-help skills is a heavy task for autistic children, since they do not understand the meaning or need of social skills. An attempt has been made to develop certain basic social and self-help skills among the selected autistic children through an intervention programme for a period of 40 days. The results are tabulated and discussed under the below mentioned heads:

A. General information of the selected autistic children

B. Development and behaviour details of the selected autistic children

C. Social and self-help skills among the selected autistic children

D. Comparison of behaviour skills before and after the intervention programme

E. Effect of the intervention programme

A. General information of the selected autistic children

For any study to be successful it should follow a systematic procedure. To fulfill this primary need, the personal profile, family and medical history of the child were collected in detail. These data served as a helping hand in structuring the individualized intervention programme for the autistic children.

1. Personal profile of the selected autistic children

Personal profile includes age of the autistic child, sex, religion, class, birth order and birth weight. These details are categorized according to each particular in Table I.

TABLE I

PERSONAL PROFILE OF THE SELECTED AUTISTIC CHILDREN

N : 30

Particulars	Percentage
• **Age**	
Less than 7	20
7-14	43
15-20	17
21 and more	20
• **Sex**	
Male	73
Female	27
• **Religion**	
Hindu	67
Muslim	20
Christian	13
• **Class**	
Junior class	17
Middle class	63
Senior class	20
• **Birth order**	
First born	37
Middle born	13
Last born	20
Only child	30
• **Birth weight**	
Below normal	20
Normal	70
Above normal	10

The special school for autistic children selected for the study is educating 30 children ranging from 4-28 years. The investigator selected ten children between the age group of 7-14 years based on judgment sampling, to give the intervention programme. And surprisingly 43 per cent of the children at the school were between this age group. It was painful to know that due to the severity of autism, 20 per cent of them who are above the age of 20 years are still in the special school. But at the same time it was encouraging to know that 20 per cent of

the selected children were below seven years. This result clearly shows the increasing awareness among the parents about autism and the need for early intervention. According to statistical studies of American Psychiatric Association (2006), boys are affected more with autistic disorder than girls with an averaging male-to-female ratio of 4.3:1. This finding is in tune with the result of the present research where the sex ratio is 7.3:2.7.

To know whether family tradition or practices have any role in the occurrence of autism in children, the religious status was assessed. Sixty seven per cent of the selected children belonged to Hindu religion, and only 13 per cent of them are Christians. Out of 20 per cent of the Muslim children four of them are from Maldives, who have come to Trivandrum ICCONS for a year or two particularly for treatment purpose. The functioning of the school consists of three classes namely the junior, middle and senior class. Once a child is diagnosed with autism he/ she will be admitted in the junior group and according to the level of attainment of the skill, they are promoted to the next class. If the teachers and medical personnel are convinced that the child's intellectual age is nearing the chronological age in every aspect, then they are sent to normal school. With these specification 17 per cent of them are in junior class, 63 per cent of the children are in middle class and the remaining in senior class. Among the selected children 37 per cent are the first borns, 13per cent of them are the middle borns, 20 per cent of them are the last borns and rest of them are single child.

Both genetical and nutritional factors influence the birth weight of the child. Under weight as well as overweight equally affect the brain development of the infant (Srilakshmi, 2007). The birth weight of the children in this study indicates that 70 per cent of the children's weight were normal, 20 per cent of them had below normal weight and 10 per cent of the selected children's birth weight were above normal.

2. Family history of the selected autistic children

The family history and genograph shows to a great extend about the occurrence and prevalence of autism in children. The table below reveals about the educational status of the parents, year of identification of autism in the child and details about consanguineous parentage. The table also projects in detail about the selected autistic children's family history of any mental/ neurological disorders and the affected person's relation with the child.

TABLE II

DETAILS OF FAMILY HISTORY OF THE SELECTED AUTISTIC CHILDREN

N : 30

Family history	Yes Percentage	No Percentage
• **Education of parents**	100	-
Father -below UG	20	-
UG & above	80	-
Mother -below UG	30	-
UG & above	70	-
• **Early identification** (less than 3 years)	63	37
• **Consanguineous parentage**	33	67
• **Family history of mental disorder**	33	67
• **Relation with the child**	[Yes N:10 (%)]	
Maternal grandparents	30	
Paternal grandparents	-	
Maternal aunt/uncle	20	
Paternal aunt/ uncle	10	
Cousin brother/ sister	30	
Brother/ sister	10	

It was enlightening to know that all the parents were educated. Eighty per cent of the fathers and 70 per cent of the mothers had a qualification of under graduation and higher. Rest of them were not graduated but all had passed twelfth or PUC. We are now well aware that early identification and intervention are the main help needed for an autistic child. The study result about the early

identification of autism was that 63 per cent of the autistic children from the selected group were identified as autistic before the age of three. Consanguineous parentage means the parents of the child will be blood related. This may be a genetical reason for the occurrence of autism in their children. Even though 67 per cent of the parents were non-consanguineous, the remaining 33 per cent of the parents were blood related.

Similarly, family history of mental/ neurological disorder is also a prime reason for the occurrance of autism in children. The percentages were also similar where 33 per cent of the children had the family history of mental/ neurological disorder, whereas 67 per cent of them did not. When the study was carried out to know the relation of the child with the affected family member, out of 33 per cent of the children, 30 per cent of the children's maternal grand father or cousin brother/ sister are neurologically affected. Twenty per cent of the children's maternal aunt/ uncle and 10 per cent of paternal aunt/ uncle have a medical history of neurological disorder. Finally 10 per cent of the child's own brother/ sister are also suffering from neurological/ mental disorders.

3. Medical history of the selected children

Autism is a neurological disorder which affects the brain. Hence the role of medicine and therapies are inevitable in bringing about a change in autistic children. Table III projects the medical details of the selected autistic children.

TABLE III

MEDICAL HISTORY OF THE SELECTED AUTISTIC CHILDREN

N : 30

Particulars	Yes (%)	No (%)
• **Full term normal delivery (FTND)**	63	37
• **Premature birth**	37	63
• **Infection after birth**	30	70
• **Taken EEG**	100	-
• **Now under medication**	67	33
• **Allergic to any food**	30	70
• **Unusual condition in pregnancy, delivery or infancy**	83 [Yes: N:25 (%)]*	17
Birth after abortion	20	
Seizures or epileptic	50	
High fever/ jaundice	23	
Maternal drug intake	7	
Abnormal birth weight/ birth cry	37	
BP/jaundice/diabetics	27	
Attempted abortion	7	
Convulsions	23	
Other reasons	7	

* Multiple response

The child's full term normal growth in the womb, depend on the conditions of both mother and the child right from the day of conception. Hence the medical details of each child were collected via medical records and personal interview with the parents. It was found that 63 per cent of the children had FTND and 37 per cent of them were of premature babies, who in an average were born within seven months. The detailed questionnaire reveals that 83 per cent of them had unusual conditions during pregnancy, delivery or infancy. Statistical results establish that out of 83 per cent, 50 per cent of the children are epileptic and have shown episodes of seizures. Twenty three per cent of the children were affected by high fever, brain fever or jaundice during their infancy stage.

Pediatric source says that an infant soon after birth should cry, so that he/ she get enough oxygen to the brain which is of vital importance for the child's proper brain development. But unfortunately 37 per cent of the children in this special school had a delayed birth cry. During the time of pregnancy 27 per cent of the mothers were suffering from maternal blood pressure, jaundice or diabetic and seven per cent of the mothers, inspite of their pregnancy had to take heavy dosage of medicines for a prolonged period of time due to severity of their disease. The maternal drug intake might also be a reason for the occurrence of neurological problem in their infants. Even though all the parents were well educated, seven per cent of the mothers had attempted abortion, but failed with this child. Twenty per cent of the mothers had a history of natural or induced abortion. Twenty three per cent of the mothers had to face convulsions during delivery period. Apart from these reasons, seven per cent of them had other complications like fall of the infant from the cradle, fall of the mother during pregnancy and continuation of breast feeding for the first child even after conceiving the second child.

Following the advice of neurologists all the selected children had taken the recent test on EEG in 2007. According to medical personnel's advice, 67 per cent of them are under medication. Generally it was seen that medicines were given to autistic children for seizures, epilepsy, hyper activeness, smell aversion, psychological disturbances or neuro related problems. Thirty per cent of the autistic children are allergic to certain foods like egg, maida, wheat and milk. A peculiar feature observed in the selected autistic children was that all of them were very particular in their food pattern. They had been bringing the same menu for lunch without even a minute change for years together.

The data collected on the medical history of the selected autistic children with the help of professionals, equipped the investigator to a great deal in assessing the reason for the occurrence of autism in children and the degree of severity of autism among the selected children.

B. Development and behaviour details of the selected autistic children

This chapter consists of developmental delay and behaviour characteristics observed among the selected autistic children, for the detailed discussion.

1. Developmental delay among the selected autistic children

Early formative period during which foundation are laid for sound physical, emotional, social and intellectual development, is the most crucial one in a child's life. Since autism is a neurological disorder, children are seen to have developmentally delayed milestone. The areas of developmentally delayed milestone are projected below.

TABLE IV

DEVELOPMENTALLY DELAYED MILESTONE AMONG THE SELECTED AUTISTIC CHILDREN

N:30

Developmental delay *	Percentage
• **Developmental delay**	
Motor development	37
Language development	87
Social development	87
Physical development	16
Intellectual development	40
Speech development	20
Communicative development	37
Non-communicative development	87

* Multiple response

All the selected children have problem in attaining developmental milestone. When evaluated in detail, parallel to the study results of Strong (2005) social and language development were seen to be the most difficult areas of development for autistic children. Eighty seven per cent each of the selected children had a delay in social, language and non-communicative

DEVELOPMENTAL DELAY AMONG THE SELECTED AUTISTIC CHILDREN

FIGURE 2

aspects of development. Almost 20 per cent of the children's speech was nil. This does not mean that they are dumb, they are able to speak but never use them meaningfully except for some meaningless echolalic speech. Thirty seven per cent of the selected children are delayed in motor and communicative development, to mention they have a poor eye-hand coordination and fine motor development. Intellectual developmental delay is seen in 40 per cent of the autistic children. But only 17 per cent of the children's physical development is lag behind. These facts are diagramatically represented in Figure 2.

2. Behaviour characteristics of the selected autistic children

Studies have proven that autistic children show certain peculiar behaviour characteristics which have been enumerated in Table V.

TABLE V

BEHAVIOUR CHARACTERISTICS OF THE SELECTED AUTISTIC CHILDREN

N :30

Behaviour characteristics	Always (%)	Sometimes (%)	Never (%)
• Engage in self-stimulating activity	47	20	33
• Selective deafness	20	53	27
• Resist cuddling	30	53	17
• Emotional reciprocity	10	30	60
• Look through people	23	57	20
• Hyperactive	23	40	37
• Destructive/ self injurious	20	37	43
• Echolalic speech	13	67	20
• Tolerate pain	60	33	7

Each child is different, hence the way of expression of behaviour by each child vary considerably. Inspite of all the difference certain characteristics exhibited by the selected autistic children are discussed here. Every child likes to be cuddled and pampered atleast by their mothers. But it was observed that 20 per cent of the children always and 53 per cent of the autistic children sometimes

resisted cuddling or bodily affection shown even by their mothers. Sixty per cent of the children never showed any emotional reciprocity. They did not respond in any kind to the emotional out bursts of their peers or siblings. Only 30 per cent of the children reacted at times to such a situation. Selective deafness was exhibited always by 53 per cent and sometimes by 20 per cent of the selected autistic children. Even though there was a sudden loud noise near by, the child did not jerk or look in that direction or they did not even blink their eyes. But at the same time they paid intense attention to mild music, sound of tearing a paper etc. Engaging in self stimulating activities is a typical characteristic of autistic children. In this study 47 and 20 per cent of the selected children were engaged in self-stimulating activities for most of the time and some times respectively, which is also referred by an author in short communication in the research high light (2008). Behaviour observed at times in 57 per cent of the children and always in 23 per cent of them is looking through people, which is not a socially accepted behaviour.

Barkely (2000) conducted a study on ADHD in autistic children in which he found that 80 per cent of the children with autistic features showed ADHD (Attention Deficit Hyperactive Disorder). But it was interesting to know that against this finding, in this research only 23 per cent of them were always hyper, 37 per cent of the children were never hyper active. Twenty per cent of the selected autistic children were extremely destructive and self-injurious in nature; whereas 37 per cent of the children occasionally exhibit destructive nature. Studies of Strong (2005) reveal that the pain threshold of autistic children is often high. In parallel to it, in this research also 60 per cent of the selected children had a very high tolerance to pain. They never showed any fear or change in expression even when they got hurt. Only seven per cent of them had very poor tolerance to pain. Echolalia is an established character of autism and is said by many researchers. The present study also justifies this fact. Sixty seven per cent of the children occasionally had echolalic speech. But 20 per cent of the selected autistic children did not have echolalic speech.

3. General characteristics of the selected autistic children

General features of the selected autistic children which include the attention span, span of eye contact, sensitiveness and skin tone are enlisted in detail in the below given table.

TABLE VI

GENERAL CHARACTERISTICS OF THE SELECTED AUTISTIC CHILDREN

N:30

General features	Percentage
• Span of eye-contact	
Less than 1 minute	17
1-5 minutes	43
5-10 minutes	10
10-20 minutes	20
20-30 minutes	3
More than 30 minutes	7
• Attention span	
Less than 10 minutes	20
10-20 minutes	33
20-30 minutes	37
More than 30 minutes	10
• Skin tone	
Tender and soft	60
Rough/ rashes	10
Normal	30
• Sensitive to *	
Touch	67
Sound	33
Smell	43
Taste	43
Light	33

* Multiple response

Span of eye contact depicts about the concentration power, interest and attention in children. In this study average span of eye contact of the selected children is only 1-5 minutes. It was sorrowing to know that 17 per cent of them had a span of eye contact for less than a minute and 43 per cent of them had only 1-5 minutes of eye contact. But seven per cent of them had a span of eye contact for more than 30 minutes which was equal to normal span. Limited research has been done to measure attention span in individuals with HFA. According to

studies conducted by Turner et al (2005), on individuals with classic autism, the individuals tend to show rare narrow attention and inability to shift attention flexibly. In parallel to the study only one tenth per cent of the children had an attention span for more than 20 minutes and one fifth percentage of the children had an attention span for less than 10 minutes in the present research is disheartening.

Another area where the related research studies are comparatively less is on the skin tone of the autistic children. In general 60 per cent of the selected children had a very tender and soft skin for their age which got bruised easily. On contrary, 10 per cent of them had rough skin with rashes. Only 30 per cent of the children had normal skin for the age. A mild provocation to any senses makes the autistic children over reactive and due to irritation they might end up in destructive or self-injurious activities. Sixty seven per cent of the children were highly sensitive to touch. Almost an equal percentage distribution of 40, were sensitive to sound, smell, taste and light.

Observation was carried out in certain other behaviour characteristics of the selected autistic children. Their reactions when approached by strangers, reaction to change in routine and class room was observed. It was seen that 40 per cent of the selected autistic children ignore or avoid the strangers approaching them. Seventeen per cent of the children used to stare at strangers and 10 per cent of them showed unusual fear and withdrawal symptoms. Seven per cent of the children were always curious to smell and touch the new person. Seventeen per cent of the selected autistic children used to smile at strangers, but only 10 per cent of them had an age appropriate behavioural reaction.

Insistence on sameness is one of the diagnostic criteria of autism. Loftin (2007) conducted a study on repetitive behaviour and insistence on sameness in autistic children; he concluded that a change in regular routine makes the autistic children depressed and provoke them to carry out violent reaction, since most of

the children were unable to convey their need for sameness verbally. When selected children's regular routine time table and class room set up was altered, different types of reactions were observed. Thirty per cent of the selected children became violent, destructive or self-injurious. Ten per cent of the selected autistic children were confused, 17 per cent of them cried hysterically and another 17 per cent of them showed irritation to change in the routine. Only 13 per cent of the selected autistic children responded verbally the need to preserve the routine and another 13 per cent of the children adjusted well to the changed situation or class room atmosphere.

C. Social and self-help skills among the selected autistic children

The social and self help skills among the selected autistic children, which are the two basic aspects of this study are discussed here.

1. Social skills among the selected autistic children

Social skills and language skills are the most difficult skills to be attained by an autistic child. Even the simplest social cues are difficult for them to understand. The survey results of certain social skills in autistic children are highlighted in percentiles in the below given table.

TABLE VII

DETAILS OF SOCIAL SKILLS AMONG THE SELECTED AUTISTIC CHILDREN

N:30

Social skills	Always (%)	Sometimes (%)	Never (%)
• Sociable	20	57	23
• Greet & respond to greetings	20	43	37
• Respond to name call	30	50	20
• Initiate interaction	7	33	60
• Wait for turn	7	63	30
• Imitate others	10	53	37
• Avoid people	30	50	20
• Unusual fear or anxiety	13	67	20
• Choose activity of interest	20	53	27
• Prefer inanimate objects	20	73	7

The percentile distribution depicts that 20 per cent of the selected autistic children inspite of the neurological disorder exhibited social skills like always responding to greetings, choose activity of interest and never show unusual fear or anxiety, they never avoid people and were sociable, is a welcoming feature. A recent study by Bellini (2004) explored the relationship between social skill deficits and social anxiety. Results indicated that there is a low negative correlation between social skill deficits and social anxiety in children with high-functioning autism, which is on par with the findings of the present research. A considerable percentage (30 per cent) of the children responded to the name calls. The darker side of the study reveals that 20 per cent of the children never responded to their name calls, 23 per cent of them were never sociable and avoided people, Domnick et al's (2006) finding is that autistic infants show less attention to social stimuli, less response even to their own name. Majority (73 per cent) of them preferred inanimate objects to people most of the time. This shows their interest to be in a world of their own. Sixty per cent of the selected autistic

SOCIAL SKILLS AMONG THE SELECTED AUTISTIC CHILDREN

Sociable

20 57 23

Responds to greetings

20 43 37

Initiate interaction

7 33 60

Respond to name call

30 50 20

Wait for turn

7 63 30

Imitate others

10 53 37

Avoid people

30 50 20

Prefer inanimate objects

20 73 7

Choose activity of interest

20 53 27

Unusual fear or anxiety

13 67 20

- Always
- Sometimes
- Never

Number in percentage

FIGURE 3

children never have initiated a conversation, even with well known people. Such common basic skills were lacking in most of the autistic children in the selected special school. Thirty per cent of them never wait for their turns to get in the school bus, going for assembly or to toilet in a queue. They rush off by pushing every body. But 63 per cent of them have attained the manner of waiting for their turns.

Thus the over all result suggests that even though in an average, 20 per cent of the children were seen fairly well in social skills, 57 per cent of them lagged behind in social skills at times. Figure 3 projects the social skills of the selected autistic children percentile wise. This result is parallel to the study result of Colleen Sell (2009) that cent per cent of the parents accepted that social skill is the most lacking skill in their autistic children inspite of maximum interventions given for the development of the social skills.

2. Self-help skills among the selected autistic children

The ultimate aim of all intervention programmes organized for autistic children will be to make them independent atleast in their daily living skills. Table VIII exhibits the self-help skills possessed by the selected autistic children before the intervention programme.

TABLE VIII

SELF-HELP SKILLS AMONG THE SELECTED AUTISTIC CHILDREN

N : 30

Self help skills	Possessed (%)	Not possessed (%)
• Toilet trained	57	43
• Dress by self	33	67
• Eat by self	57	43
• Regular sleep pattern	40	60
• Identify belongings	80	20
• Brush by self	20	80
• Wash by self	3	97

SELF HELP SKILLS AMONG THE SELECTED AUTISTIC CHILDREN

- Wash by self: 3, 97
- Brush by self: 20, 80
- Identify belonging: 20, 80
- Sleep pattern: 40, 60
- Eat by self: 57, 43
- Dress by self: 33, 67
- Toilet trained: 57, 43

-Possessed

-Not possessed

Number in percentage

FIGURE 4

It is satisfactory to find that 57 per cent of the selected autistic children possessed self help skills such as eating by self and toileting. Only half of the selected children could follow the training given to respond to nature's call. Even though 57 per cent of the children were able to eat by self, the manners and method of eating was not appropriate for the age. They mix up all the food and eat using their palm rather than using their fingers. It is encouraging to know that 80 per cent of the children were able to identify their belongings which they regularly bring to school. But the attainment of other self help skills like dressing, brushing and washing by self were far behind the satisfactory line. Sixty seven per cent of the children did not possess the skill of dressing by self, 80 per cent of them did not know to brush their teeth. A sorrowing feature is 97 per cent of the children needed assistance while taking bath. The intake of medicine is an unavoidable factor when studying about the irregularity of the sleep pattern of autistic children. Inspite of intake of drug, only 40 per cent of the children had normal and regular sleeping pattern. Figure 4 exhibits the self help skills possessed by the selected children.

These results about the self help skills of the selected autistic children helped the investigator in formulating the intervention programme for the betterment of self help skills in autistic children.

D. Comparison of behaviour skills before and after the intervention programme

Social skills like greeting, responding to the name, waiting for turns, measures to minimize self stimulating activities and interaction with peer group were taught to each child. The self help skills which were taught to children during this intervention programme were to brush, wash hand and face using soap, dress themselves, comb hair, indicate when they feel like using the toilet, identify belongings, eat by self using fingers or spoon and drink water from a glass rather than sipping. These skills were taught to children continuously for a time period of

40 days, and their differences in behaviour were studied in detail and discussed here.

1. Rating scores on behaviour skills of the experimental group

The behaviour skills of the experimental group were rated using childhood autism rating scale (CARS) before and after the conduct of the intervention programme. The comparison of the rating scores are numbered in table IX.

TABLE IX

SCORES OBTAINED BY THE EXPERIMENTAL GROUP BEFORE AND AFTER THE INTERVENTION PROGRAMME FOR BEHAVIOUR SKILLS

N : 10

Behavior skills	Children with scores (%)													
	1		1.5		2		2.5		3		3.5		4	
	B	A	B	A	B	A	B	A	B	A	B	A	B	A
• Social behavior														
Relating to people	-	-	-	20	10	40	30	20	30	-	20	20	10	-
Imitation	-	-	40	30	30	50	20	10	10	10	-	-	-	-
Adaptation to change	-	-	-	30	40	10	40	50	10	10	10	-	-	-
• Emotional behavior														
Emotional response	10	10	-	-	10	10	40	50	30	20	10	10	-	-
Fear or nervousness	20	20	60	60	20	20	-	-	-	-	-	-	-	-
• Sensory														
Listening response	10	10	10	20	20	30	40	20	20	20	-	-	-	-
Visual response	10	10	30	30	40	30	20	30	-	-	-	-	-	-
Taste, smell, touch response	10	10	40	20	10	30	20	20	20	10	-	10	-	-
• Language														
Verbal communication	-	-	-	-	30	30	10	10	20	20	-	-	40	40
Non-verbal communication	20	10	40	50	20	20	10	10	-	-	-	10	10	-
• Motor														
Body use	-	-	10	20	40	20	10	30	20	10	20	20	-	-
Object use	-	-	30	30	20	20	30	40	-	-	20	10	-	-
Activity level	-	-	10	20	40	20	20	20	10	20	20	20	-	-
• Intellectual														
Intellectual response	-	-	-	10	30	40	50	30	20	20	-	-	-	-
General impression	-	-	-	-	30	40	10	10	40	30	20	20	-	-

B: Before the intervention programme, A: After the intervention programme

Under the social behaviour- relating to people is one of the aspects rated. Before the intervention class 30 per cent of the selected children were rated with scores three, which stands for moderately abnormal relationships in the form of aloofness and minimal contacts. Ten per cent of the children were categorized with scores two, who showed mildly abnormal relationship in which the child used to avoid looking the adult at eyes and become fussy if interaction is forced. Thirty per cent of the selected autistic children were rated with scores 2.5, who exhibited characteristics between mildly and moderately abnormal relationships. An appreciative feature is after the intervention programme, 20 per cent of the children secured scores three and 10 per cent of them obtained the scores 2.5, a relative improvement was seen by decreasing their scores to two, which shows only mildly abnormal behaviour.

Imitation is another aspect in the social behaviour. Under this subdivision when the children were rated it was seen that 20 per cent of them secured 2.5 scores initially, decreased to scores two finally after the session conducted. 2.5 scores were given for children who showed behaviour between moderately abnormal imitation and mildly abnormal imitation. Children who had mildly abnormal imitation obtained scores two. One third of the selected children showed a greater adaptation to change as a result of the training imparted.

Since the intervention programme specifically concentrated on social and self-help skills, there existed no apparent difference in emotional response- fear, nervousness, listening, visual and other sensory responses among the selected autistic children. A mild improvement was found among 10 per cent of the selected children for non-verbal communication skill, as an effect of the intervention session. But there was absolutely no difference in the verbal communication skills. The basic motor skills are acquired by a child during his early ages. Due to the attainment of the developmental task during the early years, only a minor difference was noticed in the body use, object use and activity level of the autistic children within these 40 days. Ten per cent of the children, who

exhibited moderately and mildly abnormal activity levels, initially scored three and two respectively, showed an improvement by declining the score to 1.5, which indicates the nature of nearing normal activity level for age and circumstances. The intervention given using the Montessori play equipment elicited an improvement in motor activity level of the selected children.

Before the intervention programme the severity of autism of 30 per cent of the selected autistic children were only a few symptoms or only a mild degree of autism because their scores were two. Forty days of training helped another 10 per cent of the selected children to be with mild degree of autism, which is one of the objectives of this research.

2. Scores obtained for behaviour skills of the controlled group

In the below given table, the behaviour skills of the controlled group are enumerated.

TABLE X

SCORES OBTAINED BY THE CONTROLLED GROUP BEFORE AND AFTER THE INTERVENTION PROGRAMME FOR BEHAVIOUR SKILLS

N : 20

Behavior skills	Children with scores (%)													
	1		1.5		2		2.5		3		3.5		4	
	B	A	B	A	B	A	B	A	B	A	B	A	B	A
• Social behavior														
Relating to people	-	5	25	20	20	25	25	20	15	15	10	10	5	5
Imitation	-	-	30	25	10	15	30	35	15	15	15	10	-	-
Adaptation to change	-	-	15	15	20	15	35	40	20	20	10	10	-	-
• Emotional behavior														
Emotional response	-	-	-	-	20	20	15	20	40	40	5	-	20	20
Fear or nervousness	10	10	55	60	20	20	5	5	10	5	-	-	-	-
• Sensory														
Listening response	10	10	25	30	5	-	30	30	20	25	5	5	5	-
Visual response	10	15	10	15	45	30	10	10	5	10	10	15	10	5
Taste, smell, touch response	20	15	20	25	20	25	15	10	25	25	-	-	-	-
• Language														
Verbal communication	5	5	20	20	10	10	15	20	25	20	-	-	25	25
Non-verbal communication	10	10	25	25	25	25	15	15	25	25	-	-	-	-
• Motor														
Body use	-	-	35	40	20	10	5	5	15	20	15	15	10	10
Object use	-	-	30	30	10	15	25	15	10	15	25	25	-	-
Activity level	5	5	15	15	20	25	35	35	5	5	15	10	5	5
• Intellectual														
Intellectual response	-	-	5	5	15	25	55	45	25	25	-	-	-	-
General impression	-	-	15	20	20	15	25	25	20	1	5	5	15	20

B: Before the intervention programme, A: After the intervention programme

When comparison was made for the controlled group, it was seen that for the social skills, relating to people, five per cent of the autistic children decreased from the score 1.5 to one, where 1.5 score denotes behaviour between mildly abnormal and normal relationship. One is the highest score that can be attained in CARS for normal age appropriate relation. And another five per cent of them exhibited the behaviour which decreased their scores from 2.5 between moderately and mildly abnormal relation with people to scores two denoting mildly abnormal relation with people.

Thirty per cent of the children who had a score of 1.5 for the behaviour imitation reduced to 25 per cent after the intervention programme. A negative increase was seen for the aspect of adaptation to change. The score of 2.5, were given for children exhibiting behaviour between moderately and mildly abnormal adaptation to change, there were only 35 per cent of the children before the session. But at the end of the programme the percentage increased to 40. The degree of emotional response shown by five per cent of the selected autistic children scored 3.5 initially, which indicates behaviour between severely and moderately abnormal emotional response. But finally these children increased their ability to respond emotionally in more meaningful way.

No major difference was recorded for fear, nervousness, listening, visual, taste, smell and touch response of the selected autistic children. Due to the regular training given in the special school, five per cent of the children showed a decrease in their score for verbal communication from 2.5 (communication between moderately and mildly abnormal) to two (mildly abnormal verbal communication where speech shows overall retardation). No change was observed in the non-verbal communication of the selected autistic children. As a result of the physiotherapy treatment undergone by the children, an improvement was observed in their motor skills of the children. A drastic improvement was seen in the body use of five per cent of the children whose score reduced from three to 1.5, which is an improvement from moderately abnormal body use where the child may show strange behaviour to strangers, rocking, spinning etc to a score nearing normal body use for age and circumstances. The activity level of the

selected autistic children remained more or less the same through out the research period.

Fifty five per cent of the children's scores were 2.5 for the intellectual response earlier, but after the session this percentage surprisingly reduced to 45 per cent. Scores 2.5 for intellectual response denote behaviour between moderately and mildly abnormal intellectual functioning. Only 15 per cent of the children were with the score 1.5, which reveals the tendency to normalcy on severity of autism, initially. This percentage increased to 20 after the intervention class. But a worrying feature is from 15 percentage of the children with the scores four (severe autism, the child shows many symptoms or extreme degree of autism), increased to 20 per cent during the time span of the intervention programme.

E. Effect of intervention programme on the selected autistic children

In the following sub headings the effect of the intervention programme conducted by the investigator for the selected autistic children are discussed statistically. Statistically the result was treated to attain accuracy for the result of this study on "**Simple Measures For The Betterment Of Social And Self Help Skills Among The Selected Autistic Children**".

1. Difference in the total scores of behaviour skills of the experimental group before and after the intervention programme

The 10 selected autistic children who were given the intervention programme were rated using CARS (Childhood Autism Rating Scale) before and after the intervention programme. The difference in the scores are indicated in the below given table, for the discussion.

TABLE XI

TOTAL SCORES OF EXPERIMENTAL GROUP BEFORE AND AFTER THE INTERVENTION PROGRAMME

N : 10

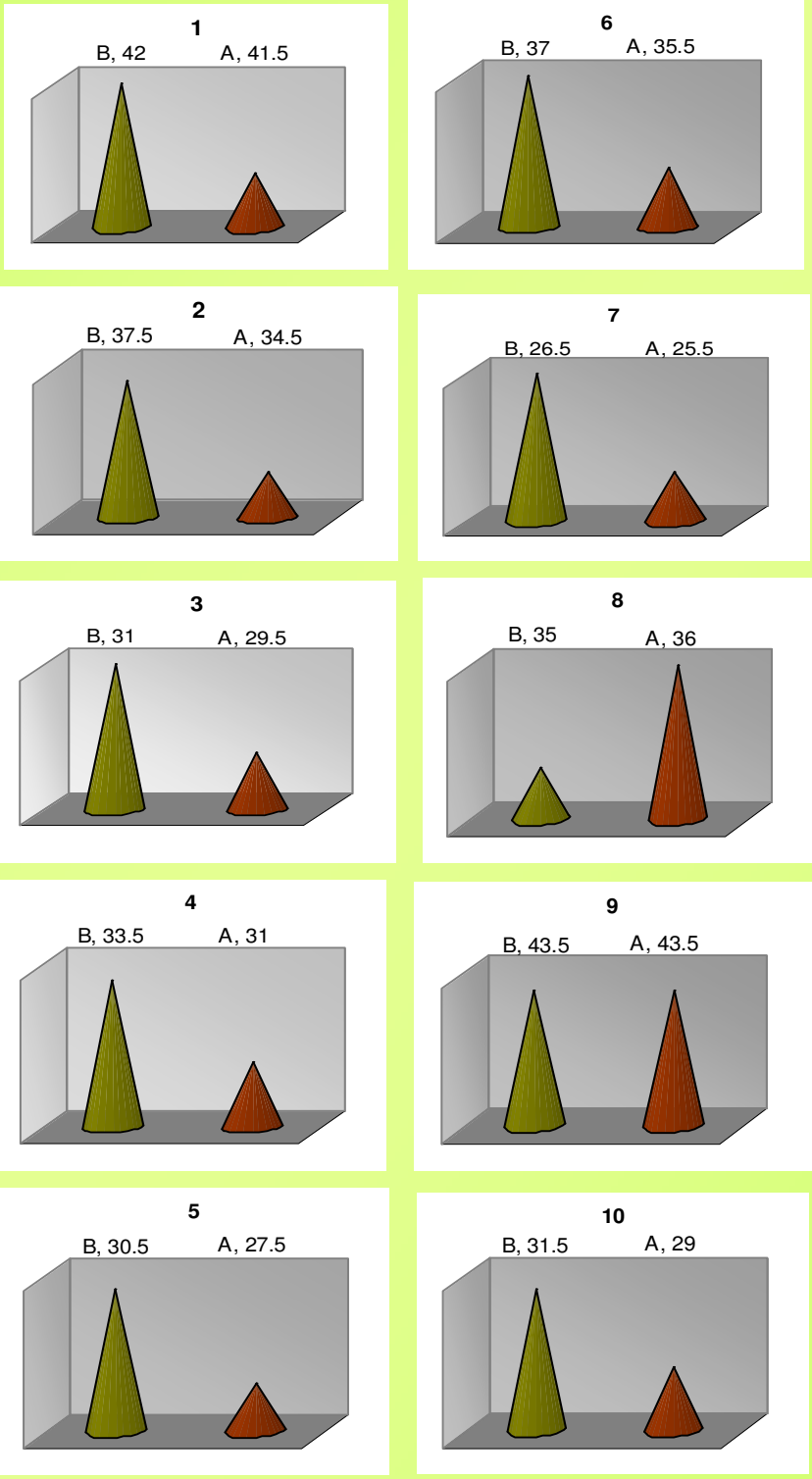
Children	Scores before B	Scores after A	Difference (B - A)
1	42	41.5	0.5
2	37.5	34.5	3
3	31	29.5	1.5
4	33.5	31	2.5
5	30.5	27.5	3
6	37	35.5	1.5
7	26.5	25.5	1
8	35	36	-1
9	43.5	43.5	0
10	31.5	29	2.5
MD	**1.45**		
S.D	**1.34**		
t value	**3.415***		

* Significant at 1 per cent level

B : Scores before the intervention class, A : Scores after the intervention class

The effectiveness of the intervention programme can be assessed only by the behavioural changes seen in the selected autistic children in the given time duration. For statistical application and convenience the children were rated in numerical scores both before and after the intervention programme. In the CARS scale the lesser the score the greater the child is nearing to normalcy. Hence the difference in the score before and after the intervention programme was calculated using the formula (B-A) where B is the score before the intervention class and A is the score after the intervention class. It can be clearly judged from the table that the intervention class knitted positive results among 80 per cent of the selected autistic children. They had a positive score difference ranging from 0.5 to 3, which is reasonably a good score difference in autistic children that can be attained in a time span of 40 days of intervention programme. Only one child had shown a decline in the score and one child showed no difference in behaviour skills even after the intervention programme. Statistical study supports the result of this research, since the calculated value of 't' is greater than the table value, the null hypothesis is rejected, hence there is significant

SCORES OF TEN EXPERIMENTAL GROUP CHILDREN BEFORE AND AFETR THE INTERVENTION PROGRAMME



B- Before intervention

A- After intervention

1-10 : Experimental group

FIGURE 5

change in the behaviour skills of the experimental group due to the intervention programme with a 't'-value of 3.415 at 1 per cent level of significance and with a standard deviation 1.34. The mean difference between the two dependent samples is 1.45. This finding is graphically represented in Figure 5.

2. Difference in the total scores of behaviour skills of the controlled group before and after the intervention programme

At the same time duration of 40 days the controlled group were also rated using the CARS scale. The difference between their total scores was studied in detail and enlisted in table XII.

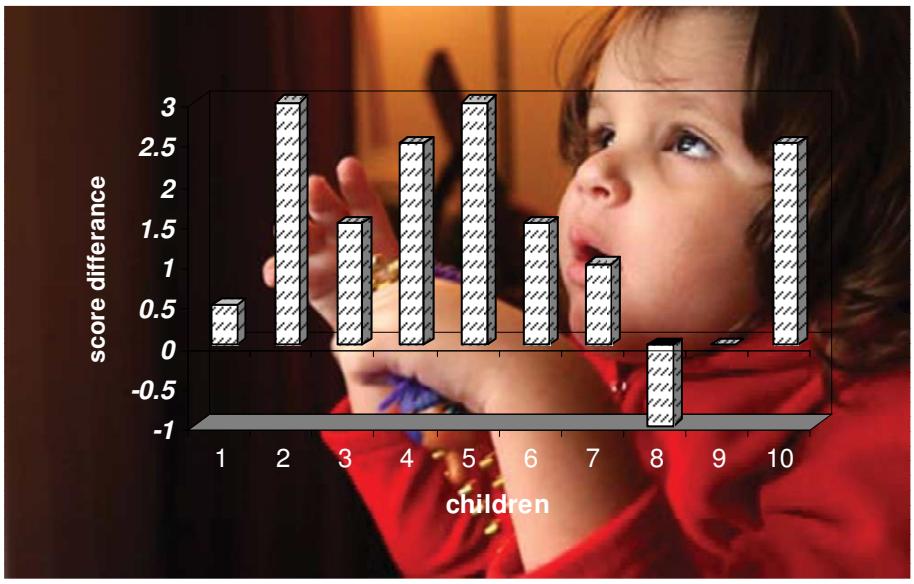
TABLE XII
TOTAL SCORES OF THE CONTROLLED GROUP BEFORE AND AFETR THE INTERVENTION PROGRAMME

N : 30

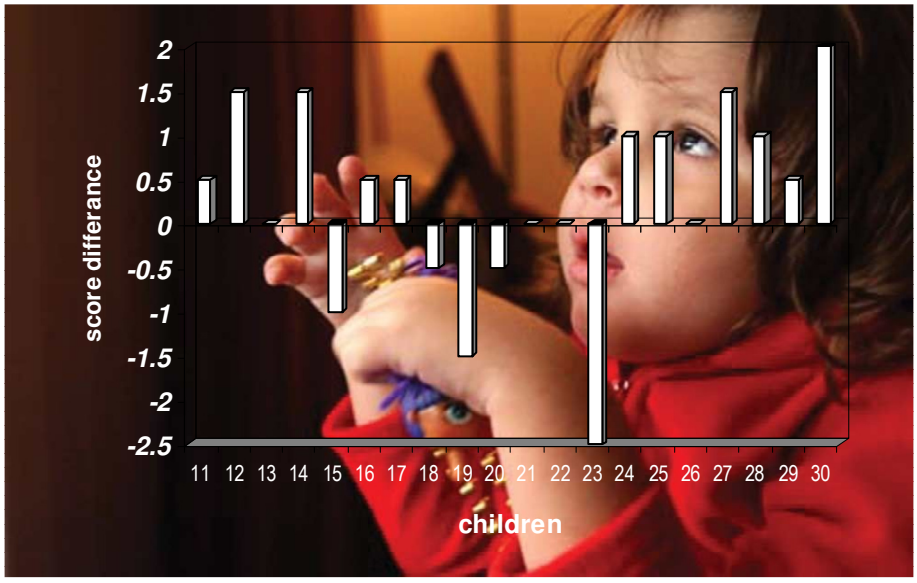
Children	Scores before B	Scores after A	Difference (B - A)
11	37	36.5	0.5
12	37	35.5	1.5
13	29	29	0
14	41.5	40	1.5
15	46	47	-1
16	26	25.5	0.5
17	48.5	48	0.5
18	27	27.5	-0.5
19	37	38.5	-1.5
20	25.5	26	-0.5
21	49	49	0
22	36.5	36.5	0
23	36	38.5	-2.5
24	22.5	21.5	1
25	52	51	1
26	31	31	0
27	30.5	29	1.5
28	34	33	1
29	41	40.5	0.5
30	30	28	2
MD	**0.275**		
S.D	**1.106**		
t value	**1.112**		

B : Scores before the intervention class, A : Scores after the intervention class

DIFFERENCE IN CARS SCORES BETWEEN THE EXPERIMENTAL AND CONTROLLED GROUP



EXPERIMENTAL GROUP



CONTROLLED GROUP

Experimental group: 1-10
Controlled group : 11-30

FIGURE 6

For the controlled group also the CARS scale was used and rated before and after the intervention programme, inorder to find the differences in behaviour skills among the controlled group who had not been the beneficiaries of the intervention session. It was observed that 55 per cent of the autistic children showed an improvement ranging from the scores 0.5 to 2. This improvement was due to the regular programmes and classes conducted by the special school. But a disheartening feature is that 25 per cent of the children declined in their behaviour skills with a negative percentage ranging from -0.5 to -2.5. And 20 per cent of the children did not show any difference in their behaviour skills during this time period of 40 days. Statistically the calculated value of 't' is less than the table value hence the null hypothesis is accepted that during the intervention class no change was observed in the behaviour skills of the controlled group. The t-value is 1.112 with a standard deviation of 1.106 and mean difference of 0.275. Figure 6 depicts the difference in the CARS scores of both the group.

3. Comparison of level of experimental and controlled group

CARS is a rating scale used to categorize autism as mild, moderate and severe. The following table shows the comparison of total CARS score of both experimental and controlled group before and after the intervention programme in percentile.

TABLE XIII
COMPARISON OF LEVEL OF AUTISM AMONG THE EXPERIMENTAL AND CONTROLLED GROUP BEFORE AND AFTER THE INTERVENTION PROGRAMME

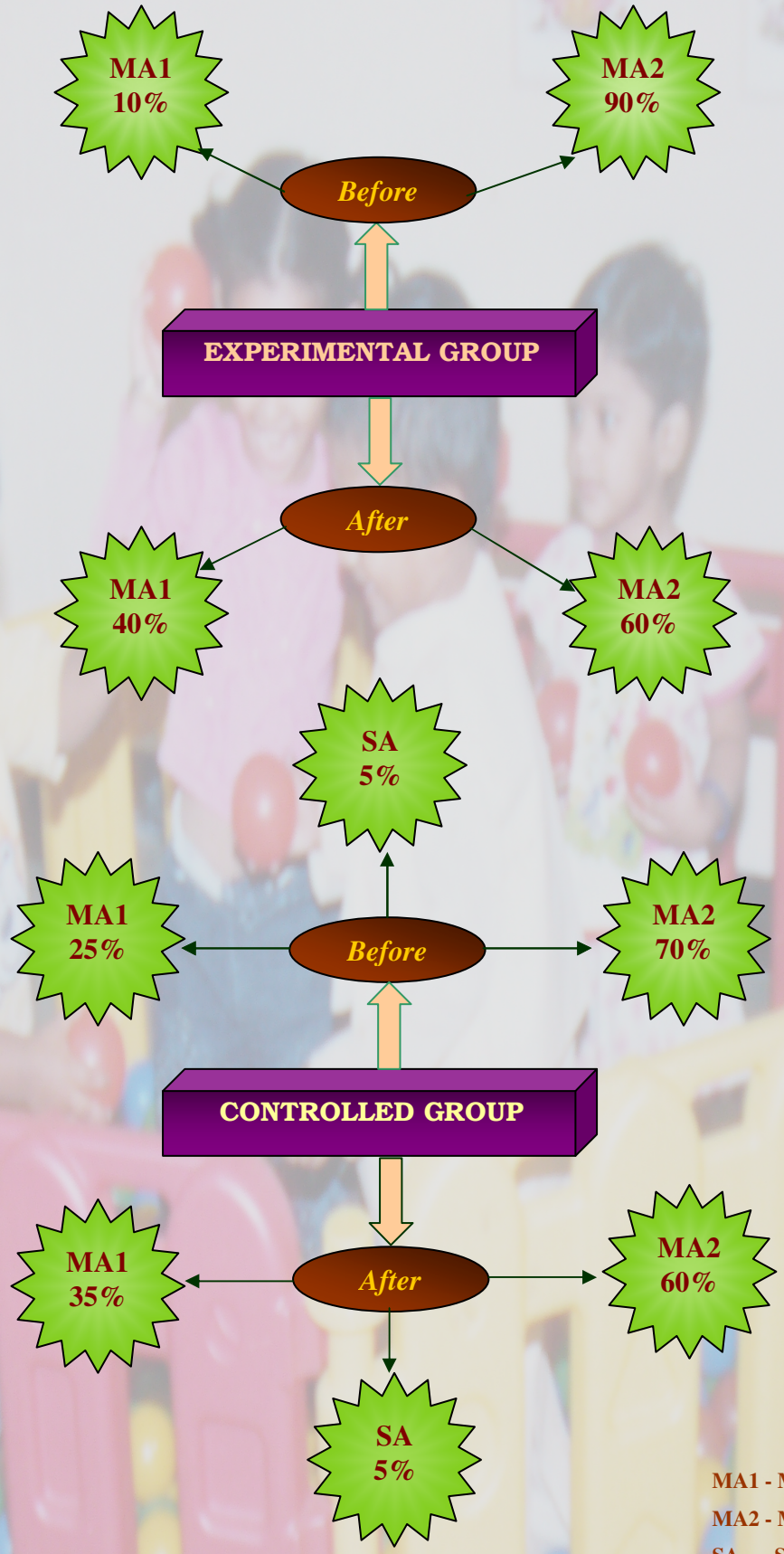
Severity of autism	Experimental group N:10 (%)		Controlled group N:20 (%)	
	B	A	B	A
Normal	-	-	-	-
Mildly autistic	10	40	25	35
Moderately autistic	90	60	70	60
Severely autistic	-	-	5	5
MD	**1.45**		**0.275**	
S.D	**1.187**			
t value	**2.556****			

** Significant at 5 per cent level

Before the conduct of the intervention programme by the investigator, 10 per cent of the children from the experimental group were assessed as mildly autistic and 90 per cent as moderately autistic using CARS scale. After the session the assessment was done by the same scale showed an acceptable improvement of 30 per cent. The results project that 40 per cent of the children in this group were mildly autistic and only 60 per cent were moderately autistic, after attending the programme, 30 per cent of the selected children have improved from moderately autistic to mildly autistic status as a result of the intervention programme.

The assessment of the controlled group of 20 autistic children showed that before the session conducted, 25 per cent of the children were mildly autistic, 70 per cent of the children were moderately autistic and 5 per cent were severely autistic. After a time span of 40 days, when again the controlled group were assessed using CARS, the result revealed that 35 per cent of the children were mildly autistic, 60 per cent of them were moderately autistic and five per cent of them were severely autistic. That is the improvement rate from moderately autistic to mildly autistic was only ten per cent. There was no change in five per cent of the severely autistic children.

PERCENTILE DISTRIBUTION OF SEVERITY OF AUTISM AMONG THE SELECTED AUTISTIC CHILDREN BEFORE AND AFTER THE INTERVENTION PROGRAMME



MA1 - Mildly Autistic

MA2 - Moderately Autistic

SA - Severely Autistic

FIGURE 7

The statistical inference of this comparison projects that the ‘t’ value is greater than the table value, hence the null hypothesis is rejected, which is equivalent to the fact that the individualized intervention programme have proved useful for the selected autistic children, to bring about a positive change in their social and self-help skills, at 5 per cent level of significance. The ‘t’value is 2.556 and standard deviation 1.187 and mean difference are 1.45 and 0.275 respectively. Figure 7 denotes the percentile distribution of the severity of autism among the selected children.

Thus the findings throw light that the one-to-one intervention programme would pave way for acquiring skills by the autistic children.

SUMMARY AND CONCLUSION

V SUMMARY AND CONCLUSION

Kauffman do believe, though, that each event offers us a brand new chance to change ourselves and our lives, whether the chance is slight or sweeping. Even if we can't know whether there is some great cosmic reason for the working of the world, we can still give events meaning with what we do with them. The whole world sees autism as hopeless and tragic. This view can be turned round, with rather a widely different and unheard of perspectives: Refusing to accept the age old view of autism as a terrible catastrophe, instead view it as a radical idea- a great opportunity to try to reach a child lost behind a thick, hazy cloud. It is always the open minded attitude that helps us to give a helping hand to an autistic child. "You don't have to 'cure' the special child inorder for his or her specialness to have meaning and value. The value lies not in 'results' but in how you treat the situation and the child."

Socialization, independency and language are the areas where the autistic child lags behind greatly, compared to other areas of development. Since they lack in socializing skills, they are labelled as 'loners' by the society and kept aloof, instead of bringing them into socializing circle. Attainment of self help skills encourages the autistic child to grow into a person with minimum dependency. With this aim this study on "**Simple Measures For The Betterment Of Social And Self Help Skills Among The Selected Autistic Children**", was taken with the purpose of conducting the intervention programme to enhance the social and self help skills among the selected autistic children. The objectives of this study were to:

- improve self-help skills (like eating, bathing, brushing, dressing, and communicating) of the selected autistic children
- enhance social skills among the selected autistic children
- increase the quality of life of the autistic children
- enhance autistic children's functional independence

- help to reduce family distress, by making the autistic children more independent and
- promote children's socializing skills, verbal and non-verbal communication, so as to send the child to normal school, according to their intellectual age.

This study and the intervention programme were conducted to the autistic children in the special school of ICCONS in Trivandrum. All the 30 children in the school were selected for the study. Their general profile, development and behaviour characteristics were assessed using the E-2 check list and their severity of autism was rated using CARS (Childhood Autism Rating Scale). Among these 30 autistic children, ten children between the age group of 7-14 years were chosen as experimental group and given the one-to-one individualized intervention programme for the inculcation of basic social and self help skills. After 40 days of intervention class, all the 30 selected children were assessed again using CARS scale to study the effect of the intervention programme. The scores obtained for the CARS scale denotes the behavioural characteristics of the autistic children. Lower the score, the better the behaviour of the children rated. Using 't' test, the effect of the intervention programme was compaired between the controlled group and the experimental group before and after the programme.

FINDINGS

Personal profile of the selected autistic children

- The male female ratio of the selected autistic children were 7.3:2.7
- Around 40 per cent of the selected autistic children were between the age of 7-14 years
- Seventy per cent of the children had normal birth weight

Family history of the selected autistic children

- Both the parents of all the autistic children were educated

- An appreciative feature is 63 per cent of the children had an early identification and intervention (before 3 years)
- Thirty per cent of the parents were of consanguineous parentage and had a family history of mental/neurological disorder

Medical history of the selected autistic children

- More than 60 per cent of the selected children were under medication
- Eighty three per cent of them had to face certain unusual conditions during pregnancy, delivery or infancy, where 50 per cent of the children are still suffering from seizures or epilepsy
- Among the selected autistic children, 30 per cent of them were allergic to certain food
- More than 35 per cent of them did not have a full term normal delivery

Developmental delays in the selected autistic children

- Irrespective of the severity in autism, all the selected autistic children had certain developmental delays
- Social, language and non-communicative developmental delays were seen among 87 per cent of the selected children
- Forty per cent of the selected children were lag behind in intellectual development

Behaviour characteristics of the selected autistic children

- More than 45 per cent of the selected children were in the habit of engaging in self-stimulating activities
- Emotional reciprocity was never shown by 60 per cent of the selected children
- Twenty per cent of them were destructive or self-injurious in nature
- More than 60 per cent of the selected autistic children had echolalic speech for most of the time

General characteristics of the selected autistic children

- Sixty seven per cent of the selected autistic children were highly sensitive to touch
- Only a span of 1-5 minutes of eye-contact was observed among 43 per cent of the children
- More than 35 per cent of the children had an attention span of around 20-30 minutes

Social skills among the selected autistic children

- Out of all the selected autistic children, 23 per cent of them were assessed as 'never sociable'
- Twenty per cent of the selected children never responded even to their name call
- Thirty per cent of them always avoided people
- More than 30 per cent of them never responded to greetings

Self help skills among the selected autistic children

- Among the selected autistic children, above 50 per cent of them were toilet trained and 80 per cent of them were able to identify their belongings
- But 97 per cent of them did not possess the skill of washing by self and 80 per cent of the children did not know to brush their teeth
- Forty three per cent of the selected autistic children, did not possess the skill of eating by self

Comparison of behaviour skills before and after the intervention programme

- In the social behaviour, relating to people, only 10 per cent of the total number of the children had a score of 2 before the intervention class, where score 2 stands for mildly abnormal relationships. But after attending the intervention programme the percentage increased to 40 among the experimental group. This proves that intervention programme given helped the children to become sociable to certain extent

- One third of the children in the experimental group showed a greater adaptation to change after attending the programme by declining their grades from 2 (score for mildly autistic child) to 1.5 (score for a child between mildly autistic and normal)
- But only five percentage of improvement was seen among the controlled group.
- No significant change was noted in the emotional behaviour, sensory response and verbal communication skill among both the group after the intervention programme
- The salient feature of the study is that due to the intervention programme, the severity of autism of 30 per cent of the selected experimental group whose score were two (mildly autistic) initially, increased to 40 percentage finally.

Effect of the intervention programme on experimental group

- The intervention class knitted positive results among 80 per cent of the selected experimental group. Their score difference ranged from 3 to 0.5
- Among the experimental group one child showed decline in the score (-1) and one child did not exhibit any change in the behaviour even after the intervention programme
- It is statistically proven the existence of significant improvement in the behaviour skills of the experimental group, in the acquisition of social and self help skills which revealed the effectiveness of the intervention programme, since the 't' value is 3.415 with 1 per cent level of significance

Behaviuoral changes in the controlled group after of 40 days training

- During the time duration of the intervention programme, it was observed that 55 per cent of the autistic children showed an improvement ranging from the score difference 0.5 to 2
- Twenty five per cent of the children's score declined and 20 per cent of them did not show any difference in their behaviour which is revealed in the CARS score also

- ‘t’ value of the difference in score for behaviour skills among the controlled group children is 1.112, which is less than the table value, hence there is no significant change in the behaviour skills of the controlled group

Comparison of effect of intervention programme in the behaviour of experimental and controlled group

- Thirty per cent of the selected autistic children in the experimental group had improved from moderately autistic level to mildly autistic status as a result of the intervention programme
- Among the controlled group the rate of improvement from moderately autistic to mildly autistic was only among 10 per cent of the children
- Hence the intervention class proved to be effective at 5 per cent level of significance with a ‘t’ value of 2.556 and SD of 1.187. The mean differences are 1.45 and 0.275

Conclusion

It was found that genetical and medical factors are the causative reasons for autism. The developmental delays and peculiar behavioural characteristics of the autistic children described in the literature found true, through this study.

Thus this research proves the fact that social and self help skills of the selected autistic children were enhanced towards the positive side with the help of the intervention programme of imparting skills on one-to-one individualized basis. If 40 days of intervention could bring appreciable change in social and self help skills of the autistic children, this research suggests that such kind of intervention to be organized forever in all the districts.

Recommendations

- The rights of the children with autism are provided in the law for people with handicaps generally. Since autism is a disorder which differ from other

handicaps, certain national polices have to be incorporated considering the special conditions of autism

- Government can provide funds for education of children with autism to each state that has a special education programme that meets a variety of standards. Special education means specially designed instruction tailored to meet the unique needs of the child with autism, including class room instruction, physical education, home instruction and if necessary- instruction for private schools, hospitals or institutions.

- A twenty four hours residential placement may well be appropriate to meet the unique needs of children with autism. Such special schools should be opened in every district

- Major population of our country is unaware about 'autism', except among the concerned personnel. Hence various measures can be undertaken by both government and non-governmental organizations, to create awareness among the public. This target can be attained with the help of mass media, printing and electronic media and also by conducting public awareness programme in schools for parents, in colleges for younger generation and in public meetings for public

- The available tools for diagnosis, treatment, therapies and intervention programmes for autistic children should be made easily and economically accessible to people irrespective of their economical status

- More personnel should be trained to conduct the therapies and intervention programmes for autistic children. They should be able to bringout the autistic child to the real world from a world of their own in every aspect. The intervention programme should cover all the areas in which an autistic child lag behind, like the social, language, motor and intellectual development.

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APPENDICES

APPENDIX A

RATING SCALE TO ELICIT INFORMATION REGARDING THE SOCIO-BEHAVIORAL CHARACTERISTIC OF THE AUTISTIC CHILDREN

Name : No:
Age :
Directions: - Tick the score column appropriately in correspondence to the child's behavior. Add the 15 scores and use the scale at the end.
Key words:- Score before- The observed rating of the child before intervention programme
Score after- The observed rating of the child after intervention programme

Score Before	Specific Behavior	Score After
	1) Relating to people	
1	No evident of difficulty or abnormality in relating to people- the child behavior is appropriate for his or her age. Some shyness, fussiness, or annoyance at being told what to be observed, but not to an atypical degree.	1
1.5	(if between these points)	1.5
2	Mildly abnormal relationships-the child may avoid looking the adult at eye, avoid the adult or become fussy if interaction is forced, be excessively shy, not be as responsive to the adult as is typical, or cling with parents somewhat more than most children of the same age.	2
2.5	(if between these points)	2.5
3	Moderately abnormal relationships-the child shows aloofness (seems unaware of adult) at times. Persistent and forceful attempts are necessary to get the child's attention at times. Minimal contact is initiated by the child.	3
3.5	(if between these points)	3.5
4	Severely abnormal relationships-the child is consistently aloof or unaware of what the adult is doing. He or she almost never responds or initiates contact with the adult. Only the most persistent attempts to get the child's attention have got any effect.	4
	2) Imitation	
1	Appropriate imitation-the child can imitate sounds, words and movements, which are appropriate for his or her skill level.	1
1.5	(if between these points)	1.5
2	Mildly abnormal imitation-the child imitates simple behaviors such as clapping or single verbal sounds most of the time; occasionally imitates only after prodding or after a delay	2
2.5	(if between these points)	2.5
3	Moderately abnormal imitation-the child imitates only the part of the time and requires a great deal of persistence and help from the adult; frequently imitates only after a delay.	3

3.5	(if between these points)	3.5
4	Severely abnormal imitation-the child rarely or never imitates sounds, words, or movements even with prodding and assistance from the adult.	4
	3) Emotional response	
1	Age appropriate and situation appropriate emotional responses-the child shows the appropriate type and degree of emotional response as indicated by the change in facial expression, posture and manner.	1
1.5	(if between these points)	1.5
2	Mildly abnormal emotional responses-the child occasionally displays a somewhat inappropriate type or degree of emotional reactions. Reactions are some times unrelated to the objects or events surrounding them.	2
2.5	(if between these points)	2.5
3	Moderately abnormal emotional responses-the child definite signs of inappropriate type and/or degree of emotional response. Reactions may be quite inhibited or excessive or unrelated to the situation; may grimace, laugh or become rigid even though no apparent emotion-producing object or events are present.	3
3.5	(if between these points)	3.5
4	Severely abnormal emotional responses-responses are seldom appropriate to the situation; once the child gets in a certain mood, it is very difficult to change the mood. Conversely the child may show widely different emotions when noting has changed.	4
	4) Body use	
1	Age appropriate body use- the child moves with the same ease, agility and coordination of a normal child of the same age.	1
1.5	(if between these points)	1.5
2	Mildly abnormal body use-some minor peculiarities may be present, such as clumsiness, repetitive movements, poor coordination or the rare appearance of more unusual movements	2
2.5	(if between these points)	2.5
3	Moderately abnormal body use-behavior that are clearly strange or unusual for a child of this age may include strange finger movements, peculiar finger or body posturing, staring or picking at the body, self-directed aggression, rocking, spinning, finger-wiggling, or toe-walking.	3
3.5	(if between these points)	3.5
4	Severely abnormal body use-intense or frequent movements of the type listed above are signs of severely abnormal body use. These behavior may persist despite attempts to discourage them or involve the child in other activities.	4
	5) Object use	
1	Appropriate use of and interest in toys and other objects-the child shows normal interest in toys and other objects appropriate for his or her skill level and uses these toys in a appropriate manner.	1
1.5	(if between these points)	1.5
2	Mildly inappropriate interest in or use of toys and other objects-the child may show atypical interest in a toy or play with in an inappropriate childish	2

	way (e.g. banging or sucking on the toy)	
2.5	(if between these points)	2.5
3	Moderately inappropriate interest in or use of toys and other objects-The child may show little interest in toys or other objects, or may be preoccupied with using an object or toy in some strange way. He or she may focus on some insignificant part of toy, become fascinated with reflecting off the object, repetitively move some part of the object, or play with one object exclusively.	3
3.5	(if between these points)	3.5
4	Severely inappropriate interest in, or use of, toys or other objects – the child may engage in the same behaviors as above, with greater frequency and intensity. The child is difficult to distract when engaged in these inappropriate activities.	4
	6) Adaptation to change	
1	Age appropriate response to change-While the child may notice or comment on changes in routine, he or she accepts these changes without undue distress.	1
1.5	(if between these points)	1.5
2	Mildly abnormal adaptation to change –When an adult tries to change tasks the child may continue the same activity or use the same materials.	2
2.5	(if between these points)	2.5
3	Moderately abnormal adaptation to change –The child actively resists changes in routine, tries to continue the old activity, and is difficult to distract. He or she may become angry or unhappy when an established routing is altered.	3
3.5	(if between these points)	3.5
4	Severely abnormal adaptation to change-the child shows severe reactions to change. If a change is forced he or she may become extremely angry or uncooperative and respond with tantrums.	4
	7) Visual response	
1	Age appropriate visual response-the child's visual behavior is normal and appropriate for that age. Vision is used together with other senses as a way to explore a new object.	1
1.5	(if between these points)	1.5
2	Mildly abnormal visual response-the child must be occasionally reminded to look at objects. The child may be more interested in looking at mirrors or lighting than peers, may occasionally stare off into space, or may also avoid looking people in the eyes.	2
2.5	(if between these points)	2.5
3	Moderately abnormal visual response-the child must be reminded frequently to look at what he or she is doing. He or she may stare into space, avoid looking people in eyes, look at objects in an unusual angle or hold objects very close to eye.	3
3.5	(if between these points)	3.5
4	Severely abnormal visual response-the child constantly avoids looking at people or certain objects and may show extreme forms of other visual peculiarities described above.	4

	8) Listening response	
1	Age appropriate listening responses-the child's listening behavior is normal and appropriate for the age. Listening is used together with other senses.	1
1.5	(if between these points)	1.5
2	Mildly abnormal listening responses-there may be some lack of response, mild overreaction to certain sounds. Responses to sounds may be delayed, and sounds may need repetition to catch child's attention. The child may be distracted by extraneous sounds.	2
2.5	(if between these points)	2.5
3	Moderately abnormal listening response-the child's responses to sound vary; often ignores a sound the first few times it is made; may be startled or cover ears when hearing some everyday sounds.	3
3.5	(if between these points)	3.5
4	Severely abnormal listening response-the child overreacts and/or under reacts to sounds to an extremely marked degree, regardless of the type of sound.	4
	9) Taste, smell and touch response and use	
1	Normal use and response to, taste, smell and touch-the child explore new objects in an age appropriate manner, generally by feeling and looking. Taste or smell may be used when appropriate. When reacting to minor, every day pain, the child expresses discomfort but does not over react.	1
1.5	(if between these points)	1.5
2	Mildly abnormal use and response to, taste, smell and touch-the child may persist in putting objects in his or her mouth; may smell or taste inedible objects; may ignore or overreact to mild pain that a normal child would express as discomfort.	2
2.5	(if between these points)	2.5
3	Moderately abnormal use and response to, taste, smell and touch-the child may be moderately preoccupied with touching, smelling or tasting objects or people. The child may react too much or too little.	3
3.5	(if between these points)	3.5
4	Severely abnormal use and response to, taste, smell and touch-the child is preoccupied with smelling, tasting or feeling objects more for the sensation than for normal exploration or use of objects. The child may completely ignore pain or react very strongly to slight discomfort.	4
	10) Fear or nervousness	
1	Normal fear or nervousness-the child's behavior is appropriate both to the situation and to his or her age	1
1.5	(if between these points)	1.5
2	Mildly abnormal fear or nervousness-the child occasionally shows too much for too little fear or nervousness compared to the reaction of a normal child of the same age in a similar situation.	2
2.5	(if between these points)	2.5
3	Moderately abnormal fear or nervousness-the child shows either quite a bit more or quite a bit less fear than is typical even for younger child in a similar situation.	3
3.5	(if between these points)	3.5

4	Severely abnormal fear or nervousness-fear persists even after repeated experience with harmless events or objects. It is extremely difficult to calm or comfort the child. The child may, conversely fail to show appropriate regard for hazards which other children of the same age avoid	4
	11) Verbal communication	
1	Normal verbal communication, age and situation appropriate.	1
1.5	(if between these points)	1.5
2	Mildly abnormal verbal communication-speech shows overall retardation. Most speech is meaningful; however some echolalia or pronoun reversal may occur. Some peculiar words or jargons may be used occasionally.	2
2.5	(if between these points)	2.5
3	Moderately abnormal verbal communication-speech may be absent. When present, verbal communication may be a mixture of some meaningful speech and some peculiar speech. Peculiarities in meaningful speech include excessive questioning or preoccupation with particular topic.	3
3.5	(if between these points)	3.5
4	Severely abnormal verbal communication-meaningful speech is not used. The child may make infantile squeals, weird or animal-like sounds; complex noises approximating speech or may show persistent, bizarre use of some recognizable words or phrases.	4
	12) Non-verbal communication	
1	Normal use of non-verbal communication, age and situation appropriate.	1
1.5	(if between these points)	1.5
2	Mildly abnormal use of non-verbal communication-immature use of non-verbal communication; may only point vaguely, or reach for what he or she wants, in situations where same age child may point or gesture more specifically to indicate what he or she wants.	2
2.5	(if between these points)	2.5
3	Moderately abnormal use of non-verbal communication-the child is generally unable to express needs or desires non-verbally and cannot understand the non-verbal communication of others.	3
3.5	(if between these points)	3.5
4	Severely abnormal use of non-verbal communication-the child only uses bizarre or peculiar gestures that have no apparent meaning and shows no awareness of the meanings associated with gestures or facial expressions of others.	4
	13) Activity level	
1	Normal activity level for age and circumstances-the child is neither more active nor less active, than a normal child of the same age in a similar situation.	1
1.5	(if between these points)	1.5
2	Mildly abnormal activity level-the child may either be mildly restless or somewhat lazy and slow moving at times. The child's activity level interferes only slightly with their performance.	2
2.5	(if between these points)	2.5

3	Moderately abnormal activity level-the child may be quite active and difficult to restrain. He or she may have boundless energy and may not go to sleep readily at night. Conversely the child may be quite lethargic, and need a great deal of prodding to get him or her to move about.	3
3.5	(if between these points)	3.5
4	Severely abnormal activity level-the child exhibits extremes of activity or inactivity and may even shift from one extreme to the other.	4
	14) Level and consistency of intellectual response	
1	Intelligence is normal and reasonably consistent across various areas-the child is as intelligent as typical children of the same age and does not have any unusual intellectual skills or problems.	1
1.5	(if between these points)	1.5
2	Mildly abnormal intellectual functioning-the child is not as smart as typical children of the same age; skills appear fairly retarded across all areas.	2
2.5	(if between these points)	2.5
3	Moderately abnormal intellectual functioning-in general, the child is not as smart as typical children of the same age; however, the child may nearly normally in one or more intellectual areas.	3
3.5	(if between these points)	3.5
4	Severely abnormal intellectual functioning-while the child is not as smart as the typical child of his age, he or she may function even better than the normal child of the same age in one or more areas.	4
	15) General impression	
1	No autism-the child shows none of the symptoms characteristics of autism.	1
1.5	(if between these points)	1.5
2	Mild autism-the child shows only a few symptoms or only a mild degree of autism.	2
2.5	(if between these points)	2.5
3	Moderate autism-the child shows a number of symptoms or moderate degree of autism.	3
3.5	(if between these points)	3.5
4	Severe autism-the child shows many symptoms or an extreme degree of autism.	4

Total CARS Score- Before :

After :

Scale:- 15-20 Normal

20-30 Mildly autistic

30-50 Moderately autistic

50-60 Severely autistic

APPENDIX B

CHECK LIST TO COLLECT BACKGROUND INFORMATION ABOUT THE AUTISTIC CHILDREN

- **Personal Identification Data** **No:**

1. Name :
2. Father/ Guardian Name :
3. Date of Birth :
4. Religion :
5. Residential Address :
6. Doctor's diagnosis :
7. Sex of the child : Male / Female

- **Family History**

8. Child's birth order

   Only child _____ First Born _____ Last Born _____

   Middle Born _____ Foster child _____

9. Consanguineous parentage : Yes / No
10. Educational qualification of parents

    Father _____

    Mother _____

11. Year of identification

    Before 3 years _____ After 3 years _____

12. Family history of mental/ neurological/ health problem : Yes / No
13. If yes, how is the person related to the child

_____

- **Prenatal, perinatal & post natal details**

14. Were pregnancy and delivery FTND (Full Term Normal Delivery)

    Yes / No

15. Was the birth premature

    Yes / No

16. Indicate the birth weight of the child

_____

17. Any unusual conditions of pregnancy, birth or infancy

    Yes / No

18. If yes, Specify

- Unusual conditions like blindness, cerebral palsy, birth injury, blue baby, very high fever, jaundice or others
- Twin birth/ birth after abortion/ attempted abortion
- Abnormal birth weight/ birth cry
- Episodes of seizures/ epileptic
- Pregnancy-wanted/ unwanted
- Age of parents at conception
- Exposure to x-ray/ drug intake
- Rh incompatibility/ trauma/ convulsions
- Maternal illness- diabetes/ BP/ jaundice/ STD/ nutritional status of mother/ other reasons

▪ **Medical details**

19. Has the child been given an electroencephalogram (EEG)

    Yes / No

20. After birth did the child get any infection or major health problem

    Yes / No

21. Is the child being given any medicine

    Yes / No

▪ **Developmental details**

22. Was there delay in developmental milestones

    Yes / No

23. If yes, in which area, specify

- motor development
- language development
- social development
- physical development
- intellectual development
- communicative ability
- non-communicative development

24. Does the child seem to be deaf

    Always _____ Sometimes _____ Never _____

25. Does the child resist curdling and bodily affection

    Always _____ Sometimes _____ Never _____

- **Behavior characteristics**

26. Does the child engage in self-stimulating activity

Always _____ Sometimes _____ Never _____

Specify _____

27. Does the child ever 'look through' or 'walk through' people

Always _____ Sometimes _____ Never _____

28. Indicate the span of eye-contact of the child

_____

29. Is the child allergic to any food

Yes / No

30. How does the child react if the daily regular rituals are altered. Specify

_____

31. Is the child hyperactive

Always _____ Sometimes _____ Never _____

32. Specify the attractiveness and skin tone of the child

_____

33. Is there a problem in that the child hits, pinches, bites or otherwise injures himself or others

Always _____ Sometimes _____ Never _____

34. Does the child tolerate pain

Always _____ Sometimes _____ Never _____

35. Does the child shows emotional reciprocity

Always _____ Sometimes _____ Never _____

36. Has the child echolalic speech

Always _____ Sometimes _____ Never _____

37. Is the child sensitive to any of the following, specify

- Touch
- Sound
- Smell
- Taste
- Light

- **Social development in the child**

38. How does the child react when approached by strangers

_____

39. Does the child greet or respond to another person's greetings

Always _____ Sometimes _____ Never _____

40. Does the child initiate a conversation or interaction

Always _____ Sometimes _____ Never _____

41. Does the child wait for their turn

Always _____ Sometimes _____ Never _____

42. How well does the child react to the changes in the class room atmosphere

_____

43. Does the child show unusual fear or anxiety

Always _____ Sometimes _____ Never _____

44. How long is the attention span of the child

_____

45. Does the child choose activity of his own interest

Always _____ Sometimes _____ Never _____

46. Does the child prefer inanimate objects

Always _____ Sometimes _____ Never _____

47. Does he/she avoid people

Always _____ Sometimes _____ Never _____

48. Does the child imitate other children

Always _____ Sometimes _____ Never _____

49. Does the child seem to be sociable

Always _____ Sometimes _____ Never _____

- **Details of self-help skills in the child**

50. Is the child toilet trained : Yes / No
51. Does the child know to dress himself : Yes / No
52. Can the child eat by himself : Yes / No
53. Normal sleep pattern : Yes / No
54. Is the child able to identify his belongings : Yes / No
55. Can the child brush by himself : Yes / No
56. Can the child wash by himself : Yes / No

APPENDIX C

APPENDIX D

TOOL USED FOR STATISTICAL INFERENCE

The sample size of the present study is 30. According to mathematical statistic a sample size of 30 or less than 30 is said to be a small sample. Hence the students 't' distribution formulated by Gosset (1900) for a sample size of less than or equal to 30 had been used in the present study for statistical analysis

Formulas

- For calculating the 't' value of two dependent sample

$$t = \frac{\bar{d}\sqrt{n}}{S}$$

$$S = \sqrt{\frac{\sum d^2 - n(\bar{d})^2}{n-1}}$$

- For calculating 't' value of two independent sample

$$t = \frac{X_1 - X_2}{S}\sqrt{n_1 n_2 / n_1 + n_2}$$

$$S = \sqrt{\frac{\sum(X_1 - \bar{X}_1)^2 + \sum(X_2 - \bar{X}_2)^2}{n_1 + n_2 - 2}}$$

Where t is the 't' distribution

S is the standard deviation

$\bar{d}$ is the mean difference

n is the sample number

X_1 is the mean of n1 sample

$\bar{X}_1$ is the mean differance of n1 sample

X_2 is the mean of n2 sample

$\bar{X}_2$ is the mean differance of n2 sample