Autism: a look into cause and treatment

Sarah Chase Ferguson

University of Northern Iowa
Autism: a look into cause and treatment

Abstract
This paper reviews the literature on the etiology and treatment of autism in an attempt to answer three questions. First, what are the main theories on the cause of autism? To answer this, the theories of the psychoanalytic, behavioral, and biological perspectives are examined. Second, what treatment methods are available for children with autism? Ideas on treatment are discussed from each of the three perspectives. In addition, UCLA's Young Autism Project and Project TEACCH are covered. Third, what is the nature of treatment? The importance of specific treatment in the areas of language, social skills, and daily living skills is reported.
HOME-SCHOOL COLLABORATION:
A CASE STUDY

A Thesis
Submitted
In Partial Fulfillment
of the Requirements for the Degree
Educational Specialist

Sarah C. Ferguson
University of Northern Iowa
May 2000
This Research Paper by: SARAH CHASE FERGUSON

Entitled: AUTISM: A LOOK INTO CAUSE AND TREATMENT

...has been approved as meeting the research paper requirement for the Degree of

Master of Arts in Education: General Educational Psychology

Barry J. Wilson
Director of Research Paper

Christine A. Macfarlane
Co-Reader of Research Paper

Barry J. Wilson
Graduate Faculty Advisor

Barry J. Wilson
Head, Department of Educational Psychology & Foundations

8-21-95
Date Approved
ABSTRACT

This paper reviews the literature on the etiology and treatment of autism in an attempt to answer three questions. First, what are the main theories on the cause of autism? To answer this the theories of the psychoanalytic, behavioral, and biological perspectives are examined. Second, what treatment methods are available for children with autism? Ideas on treatment are discussed from each of the three perspectives. In addition, UCLA’s Young Autism Project and Project TEACCH are covered. Third, what is the nature of treatment? The importance of specific treatment in the areas of language, social skills and daily living skills is reported.
# TABLE OF CONTENTS

## CHAPTER 1. INTRODUCTION

- History .................................................. 2
- Definition and Diagnostic Criteria ......................... 5
- Associated Features ...................................... 6
- Statement of Purpose .................................... 8
- Research Question ...................................... 9

## CHAPTER 2. THEORETICAL PERSPECTIVES AND TREATMENTS

- Psychoanalytic Theory .................................. 10
  - Bruno Bettelheim ...................................... 13
    - Treatment ........................................... 16
    - Summary ............................................. 22
  - Margaret Mahler ...................................... 23
    - Treatment ........................................... 25
    - Summary ............................................. 29
  - Frances Tustin ........................................ 29
    - Treatment ........................................... 31
    - Summary ............................................. 34
  - Summary of the Psychoanalytic approach to Autism .... 34
- Behavioral Theory ........................................ 35
  - Treatment ............................................. 37
  - Operant Conditioning ................................ 38
  - Social Exchange Theory ............................... 38
  - Specific Areas for Treatment ......................... 40
  - Language .............................................. 40
Application to School Psychology

REFERENCES
CHAPTER 1 INTRODUCTION

Autistic disorder, early infantile autism, or simply autism has been at the center of controversy since its inception by Leo Kanner in 1943. Initially, the controversy raged around whether or not autism was an authentic disorder. Researchers debated whether autistic behaviors were simply reflections of another mental disturbance or a separate disorder (Levinson and Osterweil, 1984). More recently, controversy has revolved around the cause of autism. For example, could "refrigerator mothers" cause the child's problems, or was there a biological defect within the child, or did the child learn these autistic behaviors in response to his or her environment? Ideas concerning both the cause and treatment of children with autism have grown each year since Kanner first published a description of the child with autism.

Today, the cause of autism is still being debated and this debate has implications for the best treatment options for these children. Through the years, three major theories have developed concerning the cause and treatment of autism. These are: psychoanalytic, behavioral, and biological. Each of these theoretical perspectives has developed unique treatment methods. In addition, to the single theory methods, many programs have taken an eclectic approach to the treatment of children with autism.
Brief History of Autism

Autism was first described by Leo Kanner of Johns Hopkins University in 1943. Kanner (1943) used the term “autism” to describe the behavioral characteristics of eleven children he felt were not covered by any existing diagnostic criteria. Kanner’s original criteria included: (a) an inability to develop relationships, (b) delay in the acquisition of language, (c) non-communicative use of spoken language, (d) delayed echolalia, (e) pronominal reversal, (f) repetitive and stereotyped play, (g) obsessive instance on the maintenances of sameness, (h) lack of imagination, (i) good rote memory, and (j) normal physical appearance. In addition, Kanner believed these abnormalities were present at infancy, which differentiates Kanner’s autistic disorder from childhood schizophrenia or other childhood psychoses.

Kanner’s choice of the word “autism” led to some confusion because the term autism had previously been used by Bleuler (1911). Bleuler used the term autism to describe the active withdrawal into fantasy shown by patients with schizophrenia. Kanner’s use of the term led to problems for several reasons. First, Kanner described a failure to form relationships where as Bleuler described a withdrawal from relationships. Secondly, while Kanner observed a lack of imagination, Bleuler described a rich fantasy life. Finally, an incorrect connection between Kanner’s autism and adult schizophrenia was often made (Rutter, 1979).
Once Kanner defined autism, earlier accounts of autism were discovered that matched the criterion he set forth. One example was Itard's (1801) Wild Boy of Aveyron, Victor. Victor was found in 1799, at the age of 11 or 12, living in the woods. Victor's behaviors could be explained by Kanner's definition of autism. Victor failed to focus on objects or people, sometimes appeared deaf, did not play with toys, had a compulsive need for sameness in his environment, and resisted contact with others. Looking back on Victor, and other similar accounts, it is evident that children with autism were in existence long before Leo Kanner officially titled the disorder in 1943.

Further research on autism demonstrated the complexity of the disorder. For example, Eisenberg and Kanner (1956) discovered that children may develop normally for the first year or two of their life before demonstrating any signs of autism. Kanner's original definition of autism was later modified to incorporate this new finding, extending the age limit for onset to 30 months. However, once the age of onset was modified, it was often ignored as a diagnostic criteria. Therefore, autism was often categorized with other disorders that did not demonstrate an onset until later childhood or adolescence (Rutter, 1979). By grouping autism with other psychoses that manifest themselves in later childhood, autism lost an important part of what differentiated it from these psychoses.
Rutter and Lockeyer (1967) defined three broad groups of symptoms characteristic of children with autism. First, was a profound and general failure to develop social relationships. Problems with language such as language retardation, echolia, and pronominal reversal made up the second group of symptoms. The final group consisted of ritualistic or compulsive behaviors. Stereotyped movements, short attention span, self injurious behavior and delayed bowel control were also described by Rutter and Lockeyer as common in children with autism, however these symptoms did not occur in all cases of autism. Rutter and Lockeyer’s symptoms corresponded well with Kanner’s 10 original criteria for autism.

Kanner’s original definition of autism included the criteria that these children had a normal IQ. Later, this was found to be untrue. Autism and mental retardation were discovered to often be comorbid (Rutter, 1979). Sixty percent of children with autism have tested at IQ’s below 50, with 20 percent between 50 and 70 and 20 percent showing IQ’s above 70 (DeMyer, Hingtgen and Jackson, 1981). However, it was also shown that IQ functioned much the same way in children with autism that it did in other children. IQ was stable throughout middle childhood and adolescence in both children with autism and children without autism (DeMyer et al., 1974). Children with autism demonstrated intelligence ranging from profoundly retarded to superior with the general condition of autism shown to be consistent regardless
of IQ. However, those children with more severe mental retardation were more likely to demonstrate more socially deviant responses as well as having higher levels of self injurious behavior (Rutter, 1979).

Current Definition and Diagnostic Criteria

The American Psychiatric Associations Diagnostic and Statistical Manual of Mental Disorders IV (DSM IV) currently defines autism as a pervasive developmental disorder. The DSM IV lists the essential features of autism as the presence of markedly abnormal or impaired development in social interaction and communication as well as a restricted repertoire of activities and interests.

According to the DSM IV the diagnostic criteria for autism include: (a) impairments in social interactions (e.g. impairments in nonverbal behaviors such as eye gaze, facial expressions, body posture, failure to develop peer relations, and lack of social or emotional reciprocity), (b) impairments in communication (e.g. delay in or lack of spoken language, inability to sustain conversations, and lack of make-believe play), and (c) restricted and stereotyped patterns of behavior, activities, and interests (e.g. abnormal preoccupations, inflexible adherence to routines, and stereotyped and repetitive mannerisms. The onset of these criteria must take place before the age of 3 years old. Finally, the disturbance cannot be better accounted for by a diagnosis of Rett’s disorder or Childhood Disintegrative
Disorder. The DSM IV diagnostic criteria are the criteria most often used when a doctor is making a diagnosis of autism.

**Associated Features**

Autism is frequently comorbid with mental retardation. Approximately 75 per cent of children with autism function at a retarded level (DSM IV, 1994). A child with autism's cognitive levels are often uneven, with areas of relatively high functioning and other areas of lower functioning. This pattern is seen regardless of the child's overall IQ (DSM IV, 1994). Children with unusually high areas of intelligence or selected skills are often referred to as idiot savants. Cognitive abnormalities such as distractibility, poor organizational ability, difficulty with abstraction, and a strong focus on details are seen in children with autism (Mesibov and Dawson, 1986). A range of behavioral symptoms are often found in autistic children. These include: hyperactivity, aggressiveness, self-injurious behavior (SIB), impulsivity, and temper tantrums (DSM IV, 1994).

Autistic disorder is seen in about 2-5 cases per 10,000 individuals, with the disorder occurring four to five times more frequently in males than in females (DSM IV, 1994). This male to female ratio is lower in children with severe mental retardation. Therefore, a female born with autism is more likely to function in the severe to profound range of mental retardation. Although, it was once believed that
autism occurred more frequently among children from highly educated and upper social classes, recent research suggests that there is no social class bias in autism (Trevarthen, Aitken, Papoudi, & Robarts, 1996).

Many criteria for autism in today's DSM IV are consistent with Kanner's ten original characteristics. However, the DSM IV criteria for autism are now much more detailed. For example, Kanner lists inability to develop relationships as one of his criteria. The DSM IV looks at qualitative impairments in social interactions. The DSM IV then goes on to specify these impairments, items such as impairment in the use of nonverbal behaviors including eye gaze, body posture, and gestures. The DSM IV also looks at the development of peer relations at appropriate developmental levels and the spontaneous seeking to share enjoyment. Not all of Kanner's ten original criteria are included in the DSM IV. For example, Kanner's criteria of normal physical appearance and good rote memory are not a part of the DSM IV criteria.

Although researchers have better articulated the characteristics of children with autism, the question of cause still remains unanswered. Researchers now know the child with autism has problems in the areas of social interaction, communication, repetitive and stereotyped movements, and the use of imaginative play. However, they do not know what causes the child to exhibit these behaviors. In order to gain a better understanding of the child with
autism, it is important to examine research on the cause and treatment methods for children with autism.

**Statement of Purpose**

The purpose of this research paper is to examine the research on the cause of autism, treatment methods for autism, and specific areas of treatment for children with autism. Autism was first identified in 1943. It is now classified by the American Psychiatric Association as a pervasive developmental disorder. The DSM IV states that the essential diagnostic features of autism include "abnormal or impaired development in social interaction and communication and a markedly restricted repertoire of activities and interests" (1994 p. 66). The three main schools of psychological theory concerning autism are the psychoanalytic, behavioral, and biological. Each school developed ideas about the etiology of autism and treatment methods for children with autism.

**Research Question**

The research questions are: (1) What are the main theories on the cause of autism? (2) What treatment methods are available for children with autism? (3) What specific areas of autism are treated?

As previously mentioned, there are three main schools of thought concerning autism. The psychoanalytic theories were the first to develop. It was believed that children with
autism had a preoccupation with inner stimuli and lacked interactions with their physical and social environments (Schreibman, 1988). Bruno Bettelheim, Margaret Mahler, and Francis Tustin were three of the main psychoanalytic theorists on autism. Those looking at autism from behavioral theory, viewed autism as a disorder that was a direct consequence of external events (Kozloff, 1973). In 1961, Charles Ferster was the first to use behavioral theory to explain autism. More recently, researchers have looked towards a biological cause for autism. Research in this area has uncovered four general areas in which the etiology of autism may occur.

Research into the etiology of autism has led to treatment methods for children with autism. Each school of thought has developed treatment methods for children with autism. In addition, there have been larger programs for the treatment of children with autism, although these program tended to be classified under behavioral theory they incorporate treatment ideas from the other perspectives. Two of these treatment programs are UCLA’s Young Autism Project and Project TEACCH. Each of these programs focuses on the treatment of individual children with autism. In addition to specific treatment programs for children with autism, research has looked at treating specific problem areas for children with autism. The three major areas are language skills, social skills, and daily living skills. Most
research in these areas has focused on behavioral treatment techniques.
Since Kanner defined autism in 1943, three schools of thought have developed explanations and treatments for autism. They are the psychoanalytic school, the behavioral school, and the biological school. Each of these theoretical perspectives views autism in a unique way. The psychoanalytic school was the first to develop, followed by the behaviorists. Most recently, many researchers are looking at the biology of the child with autism.

**Psychoanalytic Theory**

Psychoanalytic theories were the most popular approach to autism during the 1950's and 1960's. Psychoanalysts defined autism as "characterized by the absence of relations with the physical and social environment and a preoccupation with inner stimuli" (Schreibman, 1988, p. 49). In addition, the role of the parent in the development of autism was stressed. Parents of autistic children, mothers in particular, were often referred to as "refrigerator mothers" (Bettelheim, 1967). This description of the parents coincides with Kanner's original description of the group of parents he worked with. In 1970, O'Gorman described what he felt were typical parents of a child with autism.

He tries to treat Jill as a normal child, is very dutiful, but contact is not very warm...She is a withdrawn schizoid woman often near psychotic illness, who was especially withdrawn around Jill's birth and has never had a warm relationship with her. (1970, p. 18)
Psychoanalysts often placed blame on the child's parents, in particularly mothers, for the child's failure to appropriately move through the developmental stages (Schreibman, 1988).

An understanding of this developmental progression was presented by O'Gorman (1970). According to O'Gorman, when children faced a situation that was unacceptable to the child, the child could use one of four methods to deal with the situation. First, the child could flee, fight, or strive to cope with the situation as it was. Alternately, a child could attempt to make his reality less predictable in an attempt to prevent the situation and other situations like it. The third method, Gorman argued was for the child to distort reality until it become acceptable. This distortion was accomplished through either self-deception or fantasy. The final defense method was withdrawal from reality. The child excluded reality and "live[d] as far as possible within himself, ignoring or failing to respond to sensory stimuli or to make emotional relationships" (O'Gorman, 1970, p. 24-25). A child with autism took this fourth coping mechanism to an extreme by completely withdrawing into himself and no longer interacting with the outside world.

O'Gorman illustrated this withdrawal when describing the case of Johnathan. Johnathan appeared to be developing normally until the age of 11 months. At this time his parents left him with his maternal grandmother, while they went on vacation. While in the care of his grandmother, he
was reported to scream constantly and began to withdraw (i.e., became unresponsive to people and no longer seemed to play). Once his parents returned from their vacation, Johnathan paid no attention to them. During this time he also regressed in his use of language, no longer using the words he had spoken prior to his stay with his grandmother. When Johnathan was 15 months old his mother gave birth to a younger brother, at this point Johnathan’s behavior deteriorated ever more. He began to show many peculiar mannerisms (e.g., looking at everything through his fingers, and facial grimaces) and refused to play with other children.

Three major psychoanalytic theorists, have contributed to the psychoanalytic perspective. These theorists were Bruno Bettelheim, Margaret Mahler, and Frances Tustin. These theorists all shared some basic beliefs about autism, but many of their ideas differed. The following section discusses each of these individuals and their ideas concerning the cause and course of treatment for children with autism. Psychoanalytic theorists often explained their ideas by using examples from clinical practice. Some of these will be summarized.

**Bruno Bettelheim**

Bettelheim was one of the most notable advocates of the psychoanalytic theory of autism. Bettelheim (1967) contended that parents of autistic children had some sort of psychological pathology themselves that caused them to react
in abnormal patterns to their child's natural behavior. Bettelheim went on to argue that during several critical periods of a child's development (i.e., nursing, recognition of parents, toilet training), the child felt real or imagined threats or frustrations from the environment. At this point the child began to withdraw from the environment. A parent, most often the mother, with no psychological pathologies, responded to this withdrawal by rocking, cuddling, stroking and feeding the child. In comparison, those parents with psychological pathologies were likely to reciprocate the child's withdrawal. He argued these parents began spending less and less time with and emotion on the child. This parental withdrawal was interpreted by the child as rejection. In turn, the child then intensified his or her withdrawal. This began a cycle which continued until the child completely withdrew into what Bettelheim referred to as "chronic autistic disease."

Bettelheim gave an example of Marcia, an autistic child, whose father was hospitalized for a "breakdown" during the pregnancy. The father appeared to recover and then relapsed when Marcia was 18 months old. At this time Marcia's mother began to feel increasingly trapped and wanted to leave both Marcia and the father. Although Marcia's mother stayed with the family, Marcia's total care was left to babysitters. When Marcia was 2 years old, the family moved for financial reasons and her mother became even more resentful of Marcia and her father. It was then that Marcia began to completely
withdraw from her surroundings which only enraged her mother. The father, on the other hand, wanted Marcia out of the way so that he could have more of the mother’s time. Bettelheim then stated “the signals she received were clear enough; that both wished her gone. To this, the desire of both parents, Marcia acceded by living a life of nonexistence” (Bettelheim 1970, p. 159).

According to the psychoanalytic theory of autism as the child’s withdrawal intensified, all of the child’s libidinal energy was used for protection. This then resulted in an arrest of ego development. The child began to keep painful events out of his or her awareness by avoiding interactions with the environment (Weiland & Rudnick, 1961). As Bettelheim described it: “if the world of human warmth was closed to him so that to feel was to be hurt, he would create one where feelings had no place” (Bettelheim, 1970 p. 234).

Bettelheim also referred to Joey, an autistic child, who entered the world with a mother who thought of him not as a person, but as a thing. According to his mother, Joey’s birth did not alter or make any difference in her life. Joey was a colicky baby who cried most of the time. His mother never cuddled him and only touched him when necessary. Joey quickly withdrew into his own world. Bettelheim believed Joey was essentially negating himself, as well as all others, by withdrawing. The child then began to avoid the use of language or used language with no communicative purpose as a part of his withdrawal. Self-stimulation, insistence on
sameness, and echolia were viewed by Bettelheim as the child’s attempt to keep a stable environment.

While Bettelheim believed parental psychopathology was at the root of autism, he did not feel parents were consciously creating their child’s withdrawal. He argued parents were simply living their lives in the way they needed in order to “fit” their own psychological makeup. However, there was often a mismatch between the child’s needs and the parents’ needs. Bettelheim felt parents were simply unaware of this mismatch of needs.

An example of this mismatch was demonstrated in the case of John, as described by O’Gorman. When John was born, his parents were depressed not wanting a child at that point in their lives. John’s parents were ambivalent and tense toward him. John went on to develop patterns of withdrawal, obsessional mannerisms, and ritualism. He clung to his rituals and would often panic if they were disrupted. In addition at the age of 3 his only words were “mama” and “dada.”

Several assumptions were made by the psychoanalytic theorist, including Bettelheim. The first of these was that children actively interpret their experiences at very early ages and children with autism were unusually sensitive to their experiences. Second, children with autism had parents who were either unable or unwilling to provide satisfactory responses to their child. A final assumption made was that the child’s withdrawal was a willful act by the child.
time before the child could trust the environment to serve a positive function. Bettelheim believed that in order for this to happen nothing should be forced upon the child. Instead, the child should determine if he or she wanted to eat, to play, to talk, or to do anything.

Bettelheim felt children with autism needed encouragement, but not too much encouragement. He believed that much encouragement could make a child feel pushed. Bettelheim's main purpose in treatment was to "convince these children that they are neither alone nor in danger, in the struggle to find themselves" (1967, p. 93). Children with autism could only be convinced they were acting on their own will through the therapists' patient waiting. Therefore, the treatment of autism was viewed by Bettelheim as a very slow process.

The case study of a 7 year old girl with autism, Laurie, demonstrated Bettelheim's treatment methods. At the time of admittance to the Orthogenic School, Laurie was mute and suffered from severe anorexia. When Laurie was 6 weeks old, her mother returned to work and most of the child care was handled by a young nursemaid. This original nursemaid left Laurie when she was 2 1/2 years old. When Laurie was 4, her mother began to see problems in her development. For example, Laurie began making animal noises in place of the language she had learned. Laurie also gave up the bowel control she had earlier mastered. Soon after this Laurie began to withdrawal from the world. By age 6 Laurie often
appeared deaf and blind and spent much of her days motionless wherever she was put by her caretaker. When not motionless, Laurie would repetitively turn magazine pages and rip them into small pieces. Laurie began to turn away when spoken to and destructively ripped apart almost anything she could get her hands on.

Laurie was admitted to the Orthogenic school at when she was 7 years old. When she was admitted, her parents signed a statement agreeing Laurie would stay with the school until either treatment had been successful or the school felt they could not be successful with Laurie. During Laurie’s first days at the school she ate and drank almost nothing, in addition, she vomited frequently. Weeks after her admittance, she began to bite off pieces of cookies or candy. Laurie then began to eat as long as the bites were small enough she did not have to chew them. Laurie’s counselors began to play games with Laurie and her food. One of Laurie’s favorites was for the counselor to place raisins on her bedspread and for her to pick them off and eat them. This emphasized Bettelheim’s belief children with autism should not be forced but allowed to develop at their own pace.

Prior to her admittance at the school, Laurie moved her bowels rarely and often had to be forced. Once admitted to the school, her bowel movements were no longer forced. By the end of 3 months, her bowels functioned appropriately on their own. Laurie’s increased eating and independent bowel movements were seen as a sign of her increased autonomy.
Bettelheim felt this was important because she was not pushed, but allowed to work at her own pace. Laurie moved from not knowing she was having a bowel movement to knowing stools were foreign to her body to showing awareness of the act of elimination. Bettelheim felt that this was important because the more Laurie learned to do with her body and exercise control over it, the more she was learning about the outside world and her control over her environment. Bettelheim felt by gaining control over bowel movements, Laurie was gaining an inner freedom; she was awakening an interest in herself. As she gained control over her bowel movements, she began to actively eat. Her eating grew more and more normal for a child of her age.

With this new inner awareness, Laurie came closer to language. She began making more throat noises that increased in loudness and frequency. Also, her intonation began to have more of a variety. Her sounds then stopped being just noises and began to resemble speech. Around this time Laurie also became more interested in her body. She examined her hands and arms and she looked as if she was discovering them for the first time.

Bettelheim argued through gaining control and an understanding of her elimination processes, Laurie gained an awareness of herself. He stated the normal infant becomes aware of elimination as a relief of inner body tension and then becomes very interested in his or her feces. Laurie began to progress through the stages which Bettelheim
began an outer awareness by sitting in the laps of her counselors and curling up into the fetal position. She then began to bounce up and down on the counselors' laps. After weeks of this type of play by Laurie, she became interested in other parts of her counselors' bodies. She would rub against their faces and necks, patting the stomachs and backs of her counselors. After touching the breast of one counselor Laurie was reported to "come alive."

Bettelheim theorized Laurie's nursemaid never treated her as an infant. Bettelheim believed when Laurie missed these important steps as an infant, she began her autistic withdrawal. If Laurie was never treated as a human being, she never learned she was human and could not recognize or name humans. Laurie needed the support of a non threatening environment to go through the stages missed as an infant. Once Laurie was put into the "correct" environment, she thrived and quickly passed through the developmental stages she previously missed.

At the Orthogenic school Bettelheim and his colleagues only worked with the autistic children for a few months, or at the most a year or two. They believed once these children began to respond to psychoanalytic treatment, the psyche needed to slowly unfold.

Summary. Bettelheim's basic assumption was the child's withdrawal was the child's defense against a threatening environment. He also strongly believed parents of children with autism had a pathology that caused them to react in an
interest in the outside world and began to differentiate the outside world from him or her self (Mahler, Pine, & Bergman, 1975).

In 1959, the study was expanded to normal developmental processes. This expansion was made in order to further the validation of the research. It was on the basis of this research that Mahler and her colleagues hypothesized the roots of infantile psychoses lay in the end of the first or second year of a child’s life. This time span in a child’s life was termed the separation-individuation phase. In 1963, Mahler and her colleagues researched what Mahler believed were four sub phases of the separation-individuation process. These sub phases were termed: (a) differentiation and the development of body language, (b) practicing, (c) rapprochement, and (d) consolidation of individuality and the beginnings of emotional object consistency.

Mahler argued every infant goes through a developmental stage during the first few weeks of life termed “normal” autism. During this stage the infant appears “to be in a state of primitive hallucinatory disorientation in which need satisfaction seems to belong to his own ‘unconditional’, omnipotent, autistic orbit” (Mahler, et al., 1975 p.42). Through the mother’s interactions with the infant, the infant slowly emerged from this normal, autistic state. The infant gained sensory awareness and began to acknowledge his or her contact with the environment. When the infant was in this autistic state, physiological process dominated his or her
existence. The infant slept except when awakened due to hunger or other need tensions. During this stage the infant was protected from extreme stimulations in order to expedite physiological growth. The child with autism never emerged from this stage of development.

Mahler argued the infant used the mother as an orientation beacon. The matrix set up between mother and infant influenced infant development. Mahler viewed psychosis as the infant's incapacity to perceive. This inability, she speculated, may be a result of the child's biological incapacity to perceive others. She believed there was a difference in the development of a psychotic infant that caused this psychosis. The psychotic infant lacked the ability to use the mother as the auxiliary ego. This caused him or her to then develop maintenance mechanisms. These maintenance mechanisms operated to allow the infant to feel safe by blocking out stimulus from the environment.

According to Mahler, the child with autism would be content as long as his or her environment was unchanged. These children never reached the stage of symbiotic attachment with their mothers.

Treatment. Mahler placed the mother/child relationship at the center of her treatment techniques. She believed in order to produce change, the therapist needed to restructure the relationship between mother and child. Unlike Bettelheim, she believed it was unnecessary to remove the child from the home for treatment. Mahler believed the
mother was an integral part of the treatment process, both as a interpreter for the child's symptoms and in actual treatment sessions. Mahler used play therapy as the primary approach to understanding the child with autism and the child's private world. Although Mahler saw the problem as originating in the infant, she still believed the developmental tie between mother and child was crucial to the child's successful treatment.

In their book, *The Psychological Birth of the Human Infant*, Mahler, Pine and Bergman (1975), discussed the case of Sam. They saw Sam as an infant who was striving for independent functioning or autonomy. Sam's major problem was a large imbalance in his separation and individuation. That is, his individuation was ahead of his separation. Early in Sam's life he showed signs of distancing himself from his mother.

Sam's mother was a woman who threw herself into the role of mother with great intensity and enthusiasm. She attempted to satisfy all of Sam's need's before he could even express the need. Her husband reinforced her behavior with Sam. Sam's mother continued to breast feed him until he was 18 months old. From early infancy, Sam appeared to prefer small muscle activities to large motor activities. During the early stages of Sam's life, his mother needed continuous interaction with her son. As early as 4 or 5 months of age Sam began pulling away from his mother's over-stimulating environment. He would push his arms against his mother's
chest as well as arch his back away from her while being held.

Mahler theorized Sam’s slow large motor development resulted because the separation process did not occur as naturally and smoothly as it should have. Around the age of 9 or 10 months Sam began to prefer strangers to his mother and showed no separation anxiety. Sam then began to turn away from his mother and would only passively respond to her invitations to play. At about 1 year Sam was crawling and would use this behavior as an escape from his mother. He would distance himself from his mother whenever possible, and preferred strangers over his mother.

By the time Sam was 1 year old, he did not listen to his mother when she spoke. His mother would play rough with him to get his attention, but Sam would just crawl away. Although Sam would actively crawl away from his mother, he did not begin to walk until he was 18 months. It was at this time that Sam also began to refuse his mother’s breast when offered to him. After mastering walking, Sam began to take more interest in his mother. He began to show pleasure in interacting with her and would often seek her out. When his mother would leave a room, he would go and sit in the chair she had been sitting in. In addition, whenever his mother would leave the room, he became hyperactive. Mahler hypothesized he was doing so in order to recreate the excitement he had felt when his mother was in the room. Sam
started bringing toys to his mother and initiated play with her.

Although Sam showed signs of interest in his mother, there were still times when he was uninterested in her. Often, if his mother approached him, he would move away from her. When she would catch him, he would push, kick, and hit her. It appeared Sam wanted to interact with his mother only on his terms and at his initiation. However, at times, Sam would cry uncontrollably when his mother left the room. He began to follow her around, constantly by her side. Sam would alternate between clinging to his mother's side and actively trying to avoid her.

During Sam's third year of life he became very uncontrolled and agitated in his play. At the sitter's house, Sam rarely asked for his mother. If he did ask for his mother, he was satisfied as soon as he was told where she was. It was at this time Sam's mother became pregnant. As the pregnancy progressed Sam's mother became increasingly self absorbed. Sam reacted to this self absorption by reverting to his constant clinging behavior with his mother.

Sam was brought into Mahler's clinic for treatment by his parents after he reverted to his clinging behavior in his third year. Mahler observed Sam would respond well in a situation if the adult could give him individual attention. Mahler focused on recreating a positive mother-child relationship with Sam and his mother. Sam appeared to enjoy
this new connection with his mother and thrived under this environment.

Summary. The interactions between mother and infant were at the center of Mahler’s ideas on autism. Mahler looked at mother-infant separation processes that occurred in normal child development. This separation process was hypothesized to be involved in the development of autism in a child. Mahler put the mother/child relationship at the center of her treatment techniques. Using play therapy, Mahler attempted to understand the inner world of the child with autism.

Frances Tustin

Tustin was the third central psychoanalytic theorist. Tustin’s (1981) main premise was autism arose from the infant’s premature and traumatic loss of the “illusion of oneness” from the mother. According to Tustin, this was a normal state for infants after birth. The problem arose when this loss was brought into consciousness before the infant had the opportunity to integrate the sense of self and to mourn the loss this represented. The child with autism did not integrate the concepts of “me” and “not me” into a cohesive sense of self-in-relation. Instead, he or she kept these experiences separate. This occurred at the time in the infant’s development when the infant was “body-centered;” that is, the child was in a sensation-dominated state that made up the core of the self (Roser, 1996).
In 1981, Tustin defined two types of autism; encapsulated and confusional. These were later termed "autistic-like" and "schizophrenic-like". The autistic-like child was content as long as he or she was left alone, while the schizophrenic-like child needed to be with the mother at all times. The autistic-like child never reached the developmental stage of symbiotic attachment, where the schizophrenic-like child was unable to separate him or herself from the symbiotic orbit (Roser, 1996).

According to Tustin, autism was the result of a defense against a certain disruption; the child prematurely becoming aware of his or her own individualness. She focused on what she considered were psychogenetic autistic children; that is, children whose autism was not due to a biological imperfection. She described these children as being in a massive, intense sulk. According to Tustin (1987) children with autism "avoid looking at people, and communication by language, play, drawing, or modeling is scanty, and often not present at all" (p. 20). She went on to talk about children with autism's echolalic type speech, as well as their ritualistic, stereotyped, and restricted type play. Tustin believed children with autism lacked empathy and imagination. She argued these children had no inner life.

In her writings, Tustin (1981) described a 6 year-old boy, Stephen, who was brought to her. He made no resistance in coming to see her. He carried with him a toy car clutched in his hand. Stephen was a mute child. When standing in
front of Tustin, Stephen's melancholy eyes avoided her's. He did not cooperate with Tustin. In fact, he seemed oblivious she was trying to interact with him.

Stephen retreated to a corner in the room. While in the corner, he used a brown crayon to draw lines on the floor around his feet. He drew lines until there were lines surrounding the entire corner of the room.

**Treatment.** For Tustin, treatment focused on the child and the child's intrapsychic experiences. She believed the first essential part of therapy was to reverse pathological autistic processes. Once this reversal was in place, the normal autistic process could begin to take over. She argued the pathology of autism prevented the child with autism from meeting his or her needs. Her therapy was close to traditional play therapy. Tustin looked at nonverbal experiences throughout the interpretation of play (1973). She believed play therapy allowed the child to mourn their loss and understand there was a receiver for his or her emotional states (1990). She emphasized the need for structure in terms of the boundaries of space and time in the play therapy room (Tustin, 1987).

Tustin believed, when treating a child with autism, the therapist needed to concentrate on the oral elements and not let the anal and phallic elements interfere. She also argued treatment needed to be very orderly. If treatment was not orderly, the therapist and child would become overwhelmed.
Unlike Mahler, Tustin did not emphasize the importance of involvement of the mother in therapy; but, Tustin did feel it was important for the mother to be involved so she could gain support and understanding to respond appropriately to her child’s needs. Tustin also encouraged the father’s participation in therapy. To Tustin, the father’s involvement could support the mother and allow her to maintain her sense of self. Tustin also felt that when the father was involved, the child had a chance to build alternative relationships. She emphasized the agent of change in treatment of children with autism as the child’s gaining insight into their internal conflicts and coming to terms with the effects of these conflicts.

In her book, *Autistic States in Children* (1981), Tustin talks about Sam’s treatment. Tustin reported through treatment Sam developed into a relatively normal boy. When Sam started treatment, he appeared ineducable and had severely cut himself off from all human contact. Much of Sam’s progress was demonstrated in drawings Sam completed throughout therapy.

When Sam was an infant, his mother was under considerable strain; although, why she was under this strain was not specified. She was also concerned early on that there was some problem with Sam’s development. One concern she had was that while breast feeding Sam appeared unconcerned whether or not milk was flowing from her breast. Many times he did not respond to her attempt to breast feed.
through his drawings with his therapist. Through the drawings the therapist was able to gain insight into Sam and help him overcome his autistic state. By the end of treatment, Sam would sit and talk to the therapist. Out of his autistic shell, Sam felt vulnerable, but capable of handling the newly acquired skill of building relationships with people.

Summary. Tustin focused on infants' premature and traumatic loss of the illusion of oneness from the mother. Tustin hypothesized that in children with autism this loss occurred before the child could integrate the concepts of "me" and "not me." When looking at treatment, Tustin focused on the child's intrapsychic experiences. She believed she could reverse the pathological autistic process. Once she reversed the pathological autistic process in a child, the normal autistic process could take over.

Summary of the Psychoanalytic Approach to Autism

After examining the theories and treatment approaches of three psychoanalytic theorists, it was evident that a psychoanalytic approach incorporated many ideas and approaches. Each theorist had individual ideas about what caused autism and how it should be treated. In addition, themes could be seen throughout each of the psychoanalytic theorists' ideas.

One of these was a focus on the child's impaired relations with those in his or her environment. These social
deficits were crucial in understanding the child’s cognitive and linguistic deficits (Hobson, 1990). A majority of children with autism were nonverbal, which indicated a lack of preverbal context in which communication was a possibility. It was these children that were viewed as the most cut off from society and as having the poorest prognosis. Children with autism who were verbal often used language in a very idiosyncratic way. These children generally echoed words and phrases that were common in their environment. Other children with autism frequently reversed pronouns. This language capacity was seen as having developed from their social deficits (Roser & Buchholz, 1996).

Psychoanalytic theorists viewed autism through the individual. They considered the individual as distinct from his or her surroundings. Bettelheim, Mahler, and Tustin all focused on the child’s internal conflicts. Which theorized as revolving around parental rejection and a loss sense of efficacy. In addition, children with autism were viewed as unable to emerge from a normal autistic state. Autism was understood as an intersubjective disjunction, most often, the result of mother-infant difficulties. Any vulnerability felt by the infant impacted the mother-infant dyad.

**Behavioral Theory**

The behavioral model of autism, unlike the psychoanalytic and biological models, assumed the locus of
control for the disorder was external to the child. The root of autism was not a symptom or manifestation of an underlying disturbance; instead, the disorder was considered a direct consequence of an external event (Kozloff, 1973).

In 1961, Charles Ferster attempted to explain autism in terms of behavioral theory. He related the basic principles of learning theory (e.g., positive and negative reinforcement) to the behavior patterns of children with autism. Ferster argued the child’s parents failed to provide frequent reinforcement for a child’s emerging social and language behaviors. Ferster believed these parents were predisposed to general depression; or, at times simply occupied by “more important” activities which led to a low reinforcement rate of the child’s appropriate behaviors. He speculated the parents paid attention to the child’s inappropriate behaviors, such as temper tantrums, which in turn reinforced and strengthened these negative behaviors. Ferster also argued behaviors that did not disrupt the parent’s daily life (e.g., hand flapping) were ignored by parents. These self-stimulating behaviors were, in themselves, reinforcing to the child thus were strengthened whereas social and language behaviors were not.

Ferster’s arguments placed parents at the center of the cause of autism, much like the psychodynamic theory. Although Ferster hypothesized about the cause of autism, he had no empirical data to support his claims. No one had systematically observed these faulty reinforcement patterns
Ferster described. His ideas, however, provided the basis for the development of treatment programs.

Treatment

Under the behavioral model, the etiology and treatment of autism were viewed as two independent areas of consideration. Behaviorists were not concerned with the etiology of autism or the child's early history. Instead behaviorists examined behavior in the context of recent events and reinforcement histories. This focus on the immediate environment allowed researchers to manipulate aspects of the child's environment and to identify effective interventions (Lovaas & Smith, 1989).

The separation of cause and treatment was termed heteropathic therapy. Heteropathic therapy was concerned with the following: (a) the present determinants of the child's behavior, not the child's prior behavior, and (b) theories of treatment, not theories of causation. Under the behavioral approach, treatment was viewed as an educational experience for the child rather than a curative process. Treatment programs were designed to teach the child the behavioral patterns needed to function in the child's natural community. In addition, the child was taught behavioral patterns that allowed him or her to realize his or her intellectual and emotional potentials (Kozloff, 1973).
Two behavioral approaches to the treatment of autism arose from behavioral theory. These were operant conditioning and social exchange theory (Kozloff, 1973).

**Operant conditioning.** Operant Conditioning focused on behaviors; that is operants, whose future occurrence was thought to be a function of the consequences which followed the response. Operant responses could potentially be influenced by several types of consequence events. These consequences were termed by behavior theorists as positive reinforcers, positive punishers, negative reinforcers, and negative punishment.

Treatment programs developed out of operant conditioning were designed as educational environments. The aim of these programs was to modify the child's behaviors so that the child entered the natural environment using natural reinforcers and punishers. Programs were designed so autistic (e.g., hand and finger flapping, spinning) and inappropriate behaviors (e.g., pulling, pushing) were weakened through extinction and punishment procedures. The procedures used to weaken behaviors were paired with procedures to strengthen appropriate behaviors. Appropriate behaviors were designed to be incompatible with negative behaviors that the therapists were trying to weaken.

**Social exchange theory.** Autism was understood as the behaviors demonstrated by the child. These autistic behaviors were viewed as maintained by the child's every day interactions. The child with autism's behavior was determined
by consequences, reinforcers, and punishers the child received. Social exchange theory was based on the principles of operant conditioning. That is, the child would repeat the behaviors he or she was reinforced for, while not repeating behaviors for which he or she was punished. For example, if a child with autism began to bang his head on the floor the parent often inadvertently reinforced the child. This reinforcement came when the parent turned his or her attention to the child. This attention often increased future head banging from the child so the child could gain the attention of his or her parent. The parent repeated giving attention to the child because the parent was reinforced for a short time when the child stopped banging his or her head on the floor.

The long term effects of these interaction patterns were seen in families of children with autism. Observations revealed most interactions between parent and child involved the parent reinforcing the child to escape the child's disruptive behavior for a short time. Overtime, many parents learned to avoid, rather than escape, their child's behaviors. These parents gave into their child's demands even before the demand was made. For example, the parent gave their child a drink before the child asked in order to avoid the tantrum that usually functioned as a request for a drink.

Exchanges that occur between the child with autism and his or her parents were very similar to the exchanges between
children without autism and their parents. However, in the case of the child with autism, the exchanges appeared to promote and maintain pathological behavior. The child was eventually prevented from learning appropriate behaviors and parents were continuously faced with the child's disruptive behavior. According to the social exchange theory both the parent and child were caught in the cycle; as the parent tried to eliminate the child's negative behavior, the stronger the behavior became. In addition, the parent provided the child with fewer and fewer opportunities for learning appropriate behavior.

**Specific Areas for Treatment**

From a behavioral standpoint, treatment generally revolves around three specific areas of treatment: (a) language, (b) social skills, and (c) daily living skills.

**Language.** Initially, language was highly researched as a treatment for children with autism. Language deficits were found in many children with autism. Approximately 50 per cent of individuals with autism lack expressive and receptive language skills (Schreibman, 1988).

The practice of using incidental teaching, a process of increasing language by using naturally occurring interactions between the child and the caregiver, has shown to be successful (Schepis, 1982). Schepis used incidental teaching to increase expressive sign language skills in adults with autism who were nonverbal. The physical environment was
arranged so the person was encouraged to use sign language. Preferred items were placed on a shelf within sight. The person was reinforced for using sign language to request the items; in addition, he or she was reinforced whenever he or she used sign language in his or her everyday interactions. The person was taught sign language in daily sessions; that is, caregivers would present items and demonstrate the sign while encouraging the subject to imitate the sign. Schepis reported significant increases in the use of expressive sign language by the subjects.

Koegel, O'Dell and Koegel (1987) used a natural language teaching paradigm for teaching language to nonverbal children with autism. Incidental teaching as well as a discrete-trial program was used. The researchers found children exhibited more verbal skills and generalized more language skills when incidental teaching was used in comparison to the discrete trial program. However, Elliott, Hall, and Soper (1991) compared incidental teaching to discrete-trial programs and found both programs produced a significant increase in spontaneous verbalizations. Neither technique was found superior to the other. Although both programs were equally successful, the researchers hypothesized the natural teaching (i.e., incidental teaching) environment was a better choice when teaching language skills because the teaching environment was less artificial and generalization was encouraged.
Facilitated communication was first introduced into the United States in 1990 by Bilken. Facilitated communication was quickly adopted by persons working with children with autism. Children who were previously unable to communicate could now express themselves with communication boards. The facilitator would support the child's hand and finger so the child could use his or her finger to point to letters (Beck & Pirovano, 1996).

Research demonstrated children with autism developed literacy skills, in particular, word recognition skills, through facilitated communication (Healy, Aram, Horwitz, & Kessler, 1982; Richman & Kitchell, 1981; Whitehouse & Harris, 1984). In 1991, Bilken and Schbert reported subjects in their research demonstrated unexpected levels of literacy. Bilken used qualitative research methods and found subjects in natural environments with no attempt to control or manipulate by the facilitator gained independent communication.

Although facilitated communication was initially accepted with open arms, more recently, there has been some debate over its validity. The debate between those who believe there is no empirically based support and those who see it working everyday has grown more intense with each newly published study (Regal, Rooney, & Wandas, 1994). Howlin (1994) analyzed data from studies claiming success using facilitated communication and found this body of
evidence failed to support the use of facilitated communication.

Braman, Brady, Linehan, & Williams (1995) studied the face validity of facilitated communication. They discovered the response content was systematically influenced by the facilitator. There was a clear difference in correct responses in each of the two stimulus conditions. Scores were significantly higher when the facilitator knew the correct answer. This pattern was seen in all three subjects throughout all trial sessions. In addition, when the facilitator knew the correct response, the subject answered immediately. However, when the facilitator did not know the correct response, there was a delay in answering by the subject. The researchers pointed out additional research will be needed to examine the exact role of the facilitator in the process of facilitated communication.

According to Vazquez (1994) facilitated communication could either be viewed as a miracle or as a hoax. The difference laid in the assumptions a person held about facilitated communication.

If one starts with the assumption that facilitation is a method of uncovering fully developed or normal language and cognition, as Bilken seems to imply, then any evidence of cuing lends itself to suggestions of fraud or pseudoscience. On the other hand, if facilitated communication is characterized as more of a training procedure for developing linguistic and cognitive skills over a period of years, which seems to be the Australian approach, then cuing may be seen as a part of the process - just as it is a normal part of language acquisition in very young children (p. 374)
More research is needed before any definitive conclusion can be made concerning facilitated communication as an effective tool for the remediation of language deficits in children with autism.

**Social Skills.** One of the most pervasive problems of children with autism was the inability to develop normal social relationships. Instruction in simple social behaviors was often necessary before the instruction of more complex skills could be started (Newsom & Rincover, 1989). Goldstein and Wicksrom (1986) and Shafer, Egel, and Kneef (1984) used peer confederates to work on social skills with children with autism. Using shaping techniques the researchers found autistic children increased both the number of social interactions they would engage in as well as the duration of these interactions.

One problem still facing researchers is the issue of generalization. How can children with autism generalize newly found social skills to persons other than the peer confederates they have been trained with? (Matson et al., 1996) Campbell and Stremel-Campbell (1982) addressed this issue via "loose training" to reduce instructional control over a subject by randomly rotating the peer confederates rather than systematically using the same peer(s). The researchers hypothesized that if a child with autism was exposed to more than one confederate during training without any set schedule, he or she would more likely generalize the skills learned in training. Campbell and Stremel-Campbell,
as well as several other researchers (Brady, McEvoy, Wehby & Ellis, 1987; Brady, Shores, McEvoy, Ellis & Fox, 1987; McEvoy, 1988) found success using "loose training." Children learned to generalize newly learned skills to other peers in the same setting.

Koegel, Koegel, Hurley, & Frea (1992) used a self-management strategy to teach children with autism social communication skills. During the research the authors discovered social behaviors not targeted were also increasing and disruptive behaviors were decreasing. The authors hypothesized that in these children the social behaviors and disruptive behaviors were part of a larger group of behaviors which all served similar functions. Koegel and Frea (1993) went on to look at self-management strategies to change one or two social communication behaviors, such as eye gaze and gestures. Koegel and Frea hypothesized changes in these social communication skills would lead to an improvement in other social communication skills not targeted (e.g., voice volume, facial expressions, affect). They found that an increase in the target behaviors did, in fact, lead to an increase in the non-target of behaviors. Koegel and Frea concluded "the identification and treatment of pivotal social behaviors, as changes in social behaviors target for treatment may result in modification of a broader range of social and disruptive behaviors" (Matson et al., 1996 p. 442).
Daily Living Skills. Individuals with autism often struggle with daily living skills. Daily living skills are skills necessary for day-to-day functioning. A majority of studies focused on daily living skills have used positive reinforcement techniques to teach the children specific behaviors (Matson et al., 1996). Self-help skills, defined as behaviors needed by individuals to care for their own bodily needs, were often a problem area for individuals with autism. Researchers found two benefits to teaching individuals with autism self-help skills. First, when an individual learned self-help skills, they were more independent. Secondly, when an individual provided his or her own basic care, there was more time available for the caregivers to focus on other necessary skills (Reid, Wilson, & Faw, 1991). Picture schedules and prompts have been successfully used to help children with autism with their daily living skills. Other techniques often used were positive reinforcement, modeling and fading.

Task analysis was another process used with children with autism. Task analysis requires the educator or caregiver to break down a complex task into simpler behaviors. Task analysis can be used to teach a child almost any behavior (Sulzer-Azaroff & Mayer, 1977). For example, if trying to teach a child to wash his or her hands a therapist
may break the task of washing hands down into nine individual steps.

1) turn on water
2) wet hands
3) get soap
4) rub hands together
5) rinse hands
6) turn the water off
7) get the hand towel
8) dry hands
9) replace the hand towel.

Each step can then be taught separately or all together.

Task analysis has several advantages when working with children with autism. First, training may be tailored for individual children. Children may skip steps or it may be necessary to break down a step into even smaller steps (i.e., branching). In addition, task analysis may be used for a large range of behaviors and for different skill areas (Matson et al., 1996).

While language skills, social skills, and daily living skills may be the focus for individual areas targeted for behavioral treatment, treatment may also focus on the entire child.

### Treatment Programs

Over the years two main treatment programs have emerged in the treatment of autism. These are the University of
California at Los Angeles' (UCLA) Young Autism Project and the University of North Carolinas Project TEACCH. These programs provided children with autism and their families support as well as treatment programs for the child.

**UCLA’s Young Autism Project**

O. Ivar Lovaas worked with the Young Autism Project at the University of California at Los Angeles. The program, which began in the late 1960’s, used behavioral techniques to treat young (preschool age) children with autism. In 1987, Lovaas argued “behavioral treatment can build complex behaviors, such as language, and can help to suppress pathological behaviors, such as aggression and self stipulatory behavior” (p. 3). Lovaas reported a behavioral intervention project begun in 1970 that included all significant environments in the child’s life.

**Who is Admitted?** The program focused on very young children, below the age of 4 years old. Lovaas argued children under the age of 4 were most likely to generalize learning and therefore make the most of treatment.

To have been admitted to the program, a child must have met three criteria. First, the child must have had an independent diagnosis of autism from a medical doctor or a licensed psychologist. Second, the child must have had a chronological age of less than 40 months if mute and less than 46 months if echolalia. Finally, the child must have a
prorated mental age of 11 months or more at the chronological age of 30 months.

How does the program work? Once a child was admitted to the program, he or she was assigned to one of two groups. The first group received intensive one-to-one instruction for more than 40 hours per week. The second group, the control group, received less than 10 hours per week of one-to-one instruction. In addition, there was a third group, a second control group. This third group was treated the same as the first control group; however, they were not treated by the Young Autism Project described in Lovass’s 1987 article. Children in all groups received treatment for 2 or more years.

Children in the experimental group (40 or more hours per week) received therapy in their home, school, and community environments. Parents were trained so therapy could take place 365 days per year. Therapy was based on operant conditioning methods. In the first year the treatment goals included: (a) reduction of self-stimulation and aggressive behavior, (b) ability to comply to verbal requests and imitation, and (c) appropriate toy play. The second year of therapy focused on expressive and abstract language. During the third year of therapy the appropriate and varied use of expressions, preacademic tasks (e.g. reading, writing, and math) and observational learning were emphasized. Children in the second group received the same type of therapy, but with less intensity.
Program results. In 1993, Lovaas reported the results of the UCLA Psychology Departments's Autism Project. This project had worked with children with autism for over 30 years. Lovaas found parents could become skilled therapists and were often the ones who accelerated and maintained gains made in treatment. The Early Intervention Project of 1987 reported success in creating lasting gains in educational, intellectual, social, and emotional behaviors. Forty-seven per cent of the children gained an adequate amount of language, social, play, and self-help behaviors after the first year of treatment. These children were successfully mainstreamed into "regular" preschools and went on to successfully complete kindergarten and first grade in regular education classrooms. While in school, friendships were developed with "normal" children. Lovaas argued development of friendships helped to protect against relapse as well as encourage socially appropriate behavior.

Lovaas, Koegel, Simmons, and Long (1973) provided several examples of children and their accomplishments during therapy. Scottie was 4 1/2 years-old when he began the program. When admitted to the program, Scottie did not initiate contact with other people, stared out into space, self-stimulated (e.g. spinning wheels), was echolalia, had to be washed and dressed by others, and was not toilet trained. By the end of therapy Scottie was attending third grade in a "normal" elementary school and showed no signs of autism.
Tito was 5 years-old, hyperactive, and had a very short attention span upon the start of the program. He also showed no eye contact and had many compulsive rituals (e.g. lining objects up in a straight line and becoming upset if this was moved). Tito demonstrated echolia but would occasionally use speech appropriately. After 1 year in the program Tito’s largest gains were in communications; that is, his speech became spontaneous. He was reported to show improvements in most areas; however, he was still distant with strangers. At the time the study was reported, Tito was enrolled in a school for children with mental retardation 3 days per week.

Lovaas (1989) argued the reason his programs were so successful was due to the fact they worked with all behaviors, in all environments, and with all of the people who played a significant role in the child’s life. He also believed that in order for treatment to be successful, it must start with young children and take place during all or most all of the child’s waking hours. Lovaas also reported children who fared best in the program were those who acquired verbal imitation skills within the first 3 months of treatment. Those children who failed to imitate verbal behavior appeared to be more visual learners than auditory learners. These children often showed success in matching visual stimuli.

When looking at the long term outcome for children who received behavioral therapy, McEachin, Smith, and Lovaas (1993) stated “behavioral treatment has been found to
increase adaptive behaviors such as language and social skills, while decreasing disruptive behaviors such as aggression" (p. 360). The authors reported children maintained levels of intellectual functioning from the age of 7 to the age of 13 years old. The children gained an average of 30 IQ points over the course of treatment. Adaptive behavior scales also showed the children had maintained their levels of functioning following therapy.

The Young Autism Project confirmed the idea that behavioral research can be extremely effective when treating children with autism. The research demonstrated not only was behavior therapy effective, but it was most effective when the child's parents were involved in the therapy process.

Project TEACCH - Treatment and Education of Autistic and Related Communication Handicapped Children

The Treatment and Education of Autistic Children and related Communication Handicapped Children, otherwise known as TEACCH, was a state wide program serving children and their families in North Carolina. Schopler and Reichler (1984) believed parental-professional collaboration was the key to a child's improvement. This belief in parent involvement led to the founding of project TEACCH in 1966. Both Schopler and Reichler previously worked with children with severe disabilities and their families and believed these children suffered from a brain abnormality rather than a behavior disorder induced by a faulty parental
relationship. Schopler and Reichler were convinced a child’s best chance for improvement would come through parental efforts, interests, and skills (Schopler, Mesibov, Shigley, & Bashford, 1984). The TEACCH program emphasized a highly-structured, psycho-educational training approach to treatment (Schopler, Mesibov, & Baker, 1982).

Who’s admitted? Project TEACCH reached students who were in the state’s school system, 200 children were identified as autistic or having communication-related deficits. Thus, North Carolina started a state-wide system of classrooms. Each classroom was part of its local education agency; however, teacher training and consultation, diagnostic services, and parent training were all provided by TEACCH (Watson, 1988).

How does it work? TEACCH, a network of five regional centers provided diagnostic, evaluation, and treatment services. The centers worked with families on designing individual programs that focused on the area of the child’s behavior and development that were of most concern to parents. In fact, it was parents involved in the TEACCH program who convinced the North Carolina state legislature to provide the program with permanent funds (Schopler, et al., 1982). TEACCH also provided training and consultation to the staff of local group homes, vocational settings, and classrooms serving individuals with autism (Watson, 1988).

In 1980, TEACCH contracted with the US Department of Education (DOE) and the Office of Special Education Programs
(OSEP) to develop a curricula for use in classrooms serving children with autism or other communication disabilities. This curricula was designed to cover three areas of need: (a) social skills, (b) language and communication, and (c) prevocational skills. These areas had previously been emphasized in teacher training and consultation, however, this was the first time they were developed into a systematic curricula (Watson, 1988).

The TEACCH program emphasized the importance of individual programming and assessment based on the characteristics and needs of children with autism. Since, children with autism demonstrated a wide variety of skills, individualized programming was a necessity. The TEACCH curricula allowed teachers to generate appropriate objectives and activities for each individual student rather than offering a prescribed set of instructions.

One important principle of the TEACCH program was the close link between assessment and treatment components. During assessment diagnostic questions were prioritized in accordance to parents’ concerns and the child’s needs. All diagnostic procedures and results were explained to the parents. Project TEACCH believed open and honest relationships between professionals and parents were essential. The purpose behind the evaluation process was to discover the child’s strengths, needs, and difficulties. This was most effectively done when parents and professionals worked in close collaboration.
Project TEACCH believed there were three major areas of an individual with autism's life that he or she needed help to adapt: (a) home and family life, (b) school and special education, and (c) community life. TEACCH felt parents played an active role in each of the three areas (Schopler et al. 1984).

**Home and Family.** Regional TEACCH centers were used as the primary location for home and family adjustment. There were five regional centers located near University of North Carolina campuses. Staff at each center worked in collaboration with parents during the assessment phase, the development of behavioral techniques, and the development of special education procedures.

Once assessment was completed, therapists demonstrated behavioral techniques and special education procedures while parents watched through a one-way mirror. The procedures were also written out for parents. The procedures were then carried out in the home by family members. In later sessions parents demonstrated their ability to carry out programs while being observed by therapists. Parents were encouraged to introduce new procedures they felt would be of help to their child.

**School and special education.** Parental involvement in their child's education was an important part of the TEACCH program. One reason for this was generalizability. Most children with autism have poor generalization skills. If parents could replicate at home what a child was learning at
school, the child would have more success generalizing new skills (Schopler et al., 1984).

Project TEACCH set up four levels of parental involvement in the classroom. The most intense level included the parent, most often the mother, working as an assistant teacher in the classroom on a daily basis. At this level the mother usually worked with children other than her own. At the next level, the parent worked in the classroom on irregular intervals. The third level consisted of weekly meetings between the teacher and parents and occasional classroom visits by the parent. During these meetings the teacher and parent worked together to develop new teaching interventions to use with the child. The lowest level of parental involvement was a monthly conference between teacher and parent.

Community life. Each TEACCH classroom and regional center had a parent group. Parent groups met to work on issues facing individuals with autism in the community. These issues included: (a) respite care programs, (b) vocational training, (c) social skills training, and (d) vocational advocacy. Programs such as a summer camp program had their roots in these parent groups.

Program results. The TEACCH program has no empirical research supporting its efficacy; rather, it uses primarily anecdotal research. In 1982, Schopler et al. conducted a survey of parents involved with the TEACCH program. Surveys were sent to 657 families who had been involved with the
project since 1977. Over half, 348, returned the surveys. Parents perceived Project TEACCH as helping in their child's development of social relationships, motor skills, self help skills, and language and communication skills. Result suggested that families involved with the TEACCH program have found it extremely helpful in reducing some of the stresses involved with having a severely handicapped child. Parents report the program has been very effective overall and specifically in improving some of their child's more difficult behaviors, as well as the parents' ability to manage, understand, and teach them (Schopler et al., 1982 p.266).

Project TEACCH believed that through parent-professional cotherapy children could be effectively treated. Parents and professions also worked together in a task-oriented effort to help the child with autism. Schopler et al. (1984) concluded by saying "In North Carolina, the parent-professional relationships are strong and growing, which makes us optimistic about the future for our autistic residents" (p. 80).

Summary of the Behavioral Approach to Autism

Behavioral theory focused on a child's environment and what was happening there. The theories of operant conditioning and social learning were used to explain children's behaviors. The behavioral approach to autism attempted to treat individual autistic behaviors that were demonstrated rather than treating autism as a whole or relationships between parent and child.
Since Leo Kanner first termed autism in 1943, theories on the etiology of autism have gone in and out of fashion. Most recently, biological theories have been popular among researchers. Several researchers (Hermelin and O'Conner, 1970; Rutter, 1974, 1983) have demonstrated children with autism experience a cognitive defect which the researchers hypothesized was the underlying cause of many of the children's language and behavior problems. This research into the cognitive deficits of children with autism lead to a medical emphasis in the treatment of children with autism. The search for a medical solution to autism has covered a large amount of ground. The research has uncovered four general areas in which a biological deficit may have occurred in children with autism. These four general areas were: a) complications during pregnancy or birth, b) genetic involvement, c) neurological problems, and/or d) biochemical processes.

Complication During Pregnancy or Birth

Mesibov and Dawson (1986) reported increases in complications during pregnancy or birth of autistic children. Difficult labors, RH incompatibilities, toxemia, vaginal bleeding, and maternal illness were found to have occurred more often during pregnancies which resulted in a child with autism.

Gillberg and Gillberg (1983) developed an "optimality
scale" which looked at 30 prenatal, perinatal and neonatal factors such as: maternal age, medication, uterine bleeding during pregnancy, type of birth (e.g., twin or multiple birth, breech birth etc), APGAR score, and infant maturity. Optimal scores were figured for each factor and then each participants's development was compared to the optimal score. Twenty-six children born between 1962 and 1976 in the Goteborg area of Sweden composed Gillberg and Gillberg's (1983) research sample. Each participant met the then current criteria for infantile autism. The male to female ratio was 3.2 to 1. A control participant was assigned to each child with autism. Each control participant was the same sex as the experimental participant and was born in the same obstetric department as the experimental participant. Gillberg and Gillberg discovered the mothers of children with autism had lower optimality scores than did the mothers of the children in the control group. Forty-eight per cent of the experimental participants had total scores that were in the 95th percentile when compared to the control group. This reduction in optimality was found in mothers of children with autism regardless of the child's IQ score. In addition, maternal age in the experimental group was significantly higher; however the actual scores for maternal age were not reported. The only other statistically significant factors were dysmaturity and bleedings during pregnancy. Both factors were more common in the control groups than the
experimental groups. Birth weight did not differ significantly between the two groups.

As a result of this study Gillberg and Gillberg hypothesized it was necessary to study multiple factors when looking at children with autism. By studying only single factors one missed what was perhaps the main point, namely, neurohandicaps in the child were possibly more often due to the additive effects of repeated adverse events in pregnancy and the newborn period than the result on one single insult to the brain.

Tsai (1987) also looked at pre-, peri, and neonatal factors in children with autism. She argued pre- or perinatal insults to the brain were a possible biological cause for children with autism who demonstrated signs of autism from birth. She also argued postnatal cerebellum infections or injuries may have been behind the development of autism in children who developed autistic symptoms after a period of normal development. She believed these pre-, peri, and neonatal causes of autism may have stemmed from genetic defects or from conditions in the uterine environment.

Tsai looked at factors for each stage of the child’s development and the association of these factors with autism. She surveyed research which was previously conducted in these areas. Factors Tsai looked at during the prenatal stage were: (a) maternal age, (b) birth order, (c) bleeding during pregnancy, (d) maternal infectious disease during pregnancy, (e) preclampsia and toxemia, (f) maternal accident during
pregnancy, and (g) use of physician prescribed drugs. The perinatal factors considered were: (a) malposition of fetus, (b) use of general anesthesia, (c) use of forceps, (d) caesarean section, (e) cord complications, (f) meconim in the amniotic fluid, and (g) prolonged first stage labor. Neonatal factors Tsai analyzed were: (a) low birth weight, (b) respiratory distress and oxygen treatment, (c) APGAR score, and (d) hyperbilirubinemia.

Tsai's review of the literature revealed unfavorable pre-, peri, and neonatal factors were more common in children with autism than in either siblings or control subjects. Factors of maternal age, birth order, use of medication, bleeding after the first trimester, and meconium in the amniotic fluid all were significantly more prominent in children with autism. Although Tsai discovered these associations between pre-, peri-, and neonatal factors and autism, no unifying pathology was discovered.

Genetic Involvement

Previous research on families demonstrated strong evidence in support of a genetic component to autism. August, Stewert, and Tsai (1981) found approximately 2 per cent of families have two children with autism. Although this number appeared small, it was 50 to 100 per cent higher than what would be expected if using a standard prevalence rate of autism (Folstein & Rutter, 1977). Bartak, Rutter, and Cox
(1975) discovered a familial history of speech delay in approximately 25 per cent of their sample.

Twin studies have shown 36 per cent of identical twins were concordant for autism and fraternal twins showed a zero per cent concordance rating (Folstein & Rutter, 1977). Other twin studies (Ritvo, Freeman, Mason-Brothers, & Rivito, 1985) demonstrated a 95 per cent concordance rating among identical twins compared to 23 per cent among fraternal twins. It was suggested autism may act via a recessive gene that transmits a specific defect. This defect may produce structural brain abnormalities, neurotransmitter or neuroreceptor problems, or other forms of neuropathology (Schreibman, 1988).

Studies of familial factors in autism lead researchers to believe there was a genetic connection to autism. Although no genetic marker was identified for autism, Herault et al.(1993) found some preliminary data supporting the hypothesis there was a significantly lower occurrence of the B3/B3 genotypes for HRAS RFLP in children with autism. This occurrence was hypothesized to be related to either an unidentified developmental gene located near the HRAS locus or direct involvement of the HRAS gene in autism. There has also been some work done showing that C4B gene may be associated with autism (Warren, et al., 1996).

Neurological Complications

Frequently, children with autism have abnormal electroencephalograms (EEG's). In comparisons between EEG's
of children with mental retardation and autism, the children with mental retardation had abnormal EEG's 39 per cent of the time while 60 to 80 per cent of the time children with autism had abnormal EEG's (DeMeyer, 1975). Autistic children most often showed abnormalities that were focal, slowing, spiking, or paroxysmal spike-wave discharges (Mesibov & Dawson, 1986). Children with autism were also more likely to develop seizure disorders than were their non-disabled peers. Up to one-third of children with autism developed seizures at some point in their life. Further, seizures were more common in autistic individuals with lower IQ's. Also, The risk of seizure development increased with age (Schreibman, 1988).

Brain research contributed to the possibility that brain activities may be connected to autism. In 1991, Gillberg researched the connection between autism and epilepsy. He hypothesized the seizures suffered by children with autism were connected to brain dysfunctions or processes which underlie autism. As noted above, approximately one-third of individuals with autism developed seizures in adulthood. Gillberg surveyed 66 cases of individuals with autism or autistic like conditions and epilepsy. Gillberg saw such case in his private practice. He personally followed each case for at least 2 years. When then study began each patient was under the age of 25 and was diagnosed as either autistic or having autistic-like conditions, and person had at least two nonfebrile seizures in either childhood or adolescence. Seizures were classified into the following categories: (a)
complex partial seizures, (b) generalized tonic-clonic seizures, (c) juvenile myoclonic epilepsy, (d) infantile spasms, (e) childhood benign epilepsy, and (f) childhood absence epilepsy.

Gillberg found all types of seizures occurred in individuals with autism; however, complex partial seizures were most common and these seizures occurred in 82 per cent of the cases. Further, a combination of seizures was common in individuals with autism. Gillberg then hypothesized that the disorder underlying autism may have implication for treatment of autism. "For instance, if there is a progressive brain disease then it may be a fruitless enterprise – indeed harmful – to aim at total seizure control" (Gillberg, 1991 p. 72).

James and Barry (1983) found autistic children demonstrated a delay in the establishment of cerebral dominance or lateralization of function. Among normal children females demonstrated smaller differences in lateralization of brain functioning then had males (Springer & Deutsch, 1981). Therefore, more extensive bilateral damage needed to occur in females for a female to demonstrate the symptoms shown by a male with less extensive damage. This in turn could possibly account for the 4:1 male to female ratio among autistic children.

Singh, Warren, Odell, Warren, and Cole (1993) looked for a possible relationship between autoimmunity and autism. They discovered that 58 per cent of children with autism were
positive for anti-MBP. In comparison, 22 per cent of normal children were positive for anti-MBP. Myelin Basic Protein (MBP) antibodies were responsible for binding to structures of these proteins and eliminating them. The authors were not able to define a cause-effect relationship between the MBP antibodies and autism. However, it was hypothesized this may be critical in the development of neurobehavioral problems in some children with autism.

Biochemical Processes

Much of the research in the area of biochemical processes focused on the neurotransmitter, serotonin. This connection to serotonin was made in the mid 1950's. It was reported about one-third of individuals with autism had elevated blood levels of serotonin. The cause for this increase has yet to be understood (Elliot & Ciaranello, 1987). Serotonin levels in the blood stream seemed to be age related, with the highest levels found in normally developing infants, decreasing throughout childhood, and finally stabilizing during the adult years. (Mesibov & Dawson, 1986) However, 30 to 40 per cent of children with autism, failed to show the decreasing levels of serotonin in their blood streams (Freeman & Ritvo, 1984, Piven, Tsai, Nehme, Coyle, Chase, & Folstein, 1991).

Piven et. al (1991) looked at platelet serotonin and a familial history of autism. Twenty-three subjects with autism and 10 control subjects were a part of the sample. The
autistic group, in general, had serotonin levels which were above those of the control subjects. Piven et al. also found serotonin levels were significantly higher in the sample of individuals with autism who had a sibling with autism than in individuals who did not have a sibling also diagnosed with either autism or pervasive developmental disorder.

Singh, Singh, and Warren (1997) studied hyperserotonin in children with autism. They looked at both hyperserotonin and serotonin receptor antibodies in children with autism but not mental retardation. Children with autism were found to have significantly higher levels of serotonin when compared to both normal children and children with mental retardation. In addition, serotonin receptor antibodies were found in hyperserotoninemic children with autism, but were not found in the group of hyperserotoninemic children with mental retardation. Singh, Singh, and Warren hypothesized hypersrotoninemia in children with autism may cause an autoimmunity to the serotonin receptor in the brain. This in turn may trigger an antibody response against its own receptor.

In addition to serotonin, dopamine was researched for its connection to autism. Dopamine, which played a central role in schizophrenia hypothesize, was found to be elevated in children with autism. In 1983 Gillberg and Gillberg found elevated levels of homovanillic acid (HVA) in children with autism. HVA was a major dopamine metabolized in cerebrospinal fluid (CSF). Elevated levels were found in 18
of their 22 subjects. HVA concentrations were 451 - 445 nmoles per liter in the experimental subjects, as compared to 270-304 nmoles per liter in the control subjects. Although elevated levels were found, the HVA concentrations were not shown to directly correlate to any specific autistic behavior or symptom (Gillberg, 1983).

Drug Treatment

Researchers have started looking towards pharmacology to treat autism. However, rather than treating autism, target behaviors or symptoms were treated. Target symptoms included: (a) hyperactivity, (b) aggression and self-injurious behavior, (c) temper tantrums and irritability (d) obsessive-compulsive behavior, and (e) depression. As an individual aged target behaviors often changed. During childhood, hyperactivity, aggressiveness, and/or self-injurious behavior were the primary focus. Depression and obsessive-compulsive behavior typically developed in adolescents or adulthood (Campbell, Schopler, Cuevea, & Hallin, 1996).

Hyperactivity. Several studies demonstrated the effectiveness of the neuroleptic, haloperidol, in reducing hyperactivity in children with autism (Anderson et al., 1984, 1989). Children who benefited from haloperidol on a short-term basis continued to benefit when monitored on a long-term basis (Perry et al., 1989). The only side effect noted when
using haloperidol was sedation and this occurred only above therapeutic dosage levels (Locascio et al., 1991).

Naltrexone, was also effective in reducing hyperactivity. However, there was only one, double-blind study looking at the use of naltrexone in children with autism. Administration of naltrexone resulted in a significant reduction of hyperactivity (Campbell et al., 1993). No major side effects were noted, there were minimal effects on weight, and no adverse effects were seen on the liver.

Clonodine has also demonstrated effectiveness in reducing levels of hyperactivity in children with autism. Clonodine was first used in individuals with Tourette’s syndrome (Leckerman, et al, 1991). Although sample sizes have all been too small to make a definitive answer about its effectiveness in children with autism, it appears to be a useful tool (Frankhauser, Karumanchi, German, Yates, & Karumanchi, 1992; and Jaselskis, Cook, Fletcher, & Leventhal, 1992).

In 1995, Quintana et al. found the use of methylphenidate was effective in reducing hyperactivity in children with autism. Ten children, six boys and four girls, ranging in age from 7 to 11 participated; methylphenidate was successful in reducing levels of hyperactivity. In addition, there were no adverse side effects noted.

The final drug showing persuasive evidence in reducing hyperactivity was clomipramine. Clomipramine is a serotonin
reuptake inhibitor. In a double-blind study of 24 subjects, ranging in age from 6 to 18 years old, clomipramine was superior to a placebo in reducing levels of hyperactivity in children with autism. Side effects associated with the use of clomipramine were grand mal seizures (i.e., tonic-clonic) and tachycardia (i.e., resting heart rate of 160 to 170 a minute) (Campbell et al., 1995).

Temper tantrums and irritability. Haloperidol demonstrated effectiveness in treating temper tantrums in children with autism. In 1984, Anderson et al. did a double-blind, placebo-controlled study with 45 children with autism. The mean age of the children was 4 1/2 years old. Forty-two out of the 45 children were also mentally retarded. Although haloperidol was successful in reducing temper tantrums among children with autism, there were some possible irreversible side effects. These side effects included tardive dystonias and other extrapyramidal effects.

Summary of the Biological Approach to Autism

Although research is showing individualized and small group success in treating children with autism through drug treatment, no biological etiology has been definitively identified. According to Morgan (1996) basic symptoms of autism have been resistant to drug treatment.
CHAPTER 3 CONCLUSION

Theories on Cause

Since Kanner's (1943) first discussion on autism, the basic criteria for autism have stayed very much the same. One exception is that Kanner originally believed these children were of normal intelligence; however, autism is often comorbid with mental retardation. In addition, some of Kanner's original criteria have been expanded.

After it was determined that autism was, in fact, a true disorder of its own, theorists began to look at it more seriously. What was causing this mysterious disorder? What were the best ways to treat children with this disorder? These were just two of the questions theorists asked themselves. Although, no one school of thought could definitively explain the etiology of autism, theories about the origin of autism abounded. Each theory focused on a different aspect of the child with autism.

The psychoanalysts began looking within the child and at the child's early development for answers to these questions. The relationship between the infant and child was the center of attention. Behavioral theory looked outside of the child, at the child's environment. How was the environment shaping the child's behaviors? What reinforcers and punishers was the child receiving from his or her environment? It was theorized that it was these interactions between the child and the environment that was at the root of autism. Researchers then began to look for biological causes to
autism. Is there some biological abnormality that is causing autism? Each of these viewpoints began to answer some of the mystery of autism, but there is still a lot to be discovered.

Theories on Treatment

When looking at the treatment of children with autism from a behavioral vantage point, there were three main categories of treatment. These included: social skills, language skills, and daily living skills. Each of these skill areas are areas in which children with autism often have deficits. Researchers have worked on developing ways in which these areas can be supported in the life of a child with autism.

With these new theories in hand researchers began to develop treatment program for children with autism. Each treatment was as different as their proposed cause. The psychoanalysts used counseling and play therapy. The UCLA Young Autism Project (the Lovaas method) and Project TEACCH were two programs developed from the behavioral model. The Lovaas method focused on an intense, 40 hours per week, behavioral treatment for 2 to 3 years. According to his own research Lovaas demonstrated astonishing results. Many of the children with autism in his program were considered cured of autism after completion of the program.

Project TEACCH differed from the UCLA project it that it became a part of the North Carolina school district’s special
education programming. This program did not claim to cure children from autism, but rather helped them succeed as far as they could and overcome as many barriers as they could. No empirical research has been conducted looking at the effectiveness of Project TEACCH. However, parents were survived about their impressions of the project, with a majority of the parents feeling the project was a success for their child.

Biological research has had limited success in using drugs to treat autism. Several drugs have been effective in treating individual autistic behaviors; however, no drug has been effective in treating autism as an entire disorder.

Throughout the years of research on autism no magical cure has been found. Although many treatment methods have demonstrated successful in helping a child with autism improve in some of their problem areas, as of now, researchers are only able to treat the symptoms of autism. It still remain uncertain whether autism has a single source; or, whether it is a behavioral syndrome with several causes (Rutter, 1987). Until the etiology of autism is better understood, treatment methods are going to focus on treating autism one symptom at a time.

**Application to School Psychology**

The school psychologist is a position where he or she will be working with children with autism, the families of
children with autism, as well the school personnel. The school psychologist will be concerned with the (a) assessment of children with autism, (b) interpretation of assessment results to the children's Individual Education Plan (IEP) team members, including the children's parents, (c) offering information about autism to both school personnel and families, (d) sharing current research with the school and family, (e) helping select appropriate treatment options, (f) helping to implement treatment programs, (g) assisting classroom teachers with progress monitoring, and (h) working as a liaison between the school and home.

In addition, what type of treatment the child is receiving in the home environment has direct implications on the child's educational environment. The school is there to help the facilitate the growth of the child with autism. It is important that the school psychologist review the relevant research on autism so that he or she can make informed decisions concerning appropriate educational services for children with autism.

In order for the school psychologist to make informed decisions about education services it is important that the school psychologist is aware of what type of treatment the child is receiving at home. In an ideal situation a child with autism will be receiving similar treatment methods both in the classroom at school and in his or her home environment. One reason for this is that children with autism have problems generalizing newly learned skills. If
both the home and school environment can emphasize and reinforce the same skills, the child is more likely to have greater success in the classroom.

When working with families of children with autism one of the most important roles the school psychologist can play is to help coordinate the home and school programming for the child. Children with autism have demonstrated they can make the most out of their education when parents and the school work together to create the best learning environment possible for the student.

Children with autism differ greatly in their academic abilities. Due to this, many schools do not have special programs for their students with autism. Schools may serve children with autism in a variety of settings. A child with autism may be found in a regular education classroom all the way to a classroom for children with severe and profound mental retardation. The most important key to a student’s success in the educational system is that the program the child is in meets the needs of that particular child. Since children with autism vary so greatly in their strengths and weaknesses, no one program can be said to work for all children with autism. Children with autism are just like all other children in that their needs in the classroom are different from every other student’s.

Autism is a disorder that is only starting to be understood by researchers. This paper has identified three
of the major theories on the etiology and treatment of autism.
References


