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Performance of adolescent autistic males on the Michigan picture language inventory

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AN ABSTRACT OF THE THESIS OF Marcia Sharril Kline for the
Master of Science in Speech Communication: Emphasis in
Speech Pathology/Audiology presented April 24, 1975.

Title: Performance of Adolescent Autistic Males on the
Michigan Picture Language Inventory.

APPROVED BY MEMBERS OF THE THESIS COMMITTEE:

Mary Gordon, Chairwoman

Dr. Warren Fay

Joan McMahon

Dr. Jack Hegrenes

The purpose of this study was to compare the expressive
and comprehensive language structure skills of a selected
sample of normal males and adolescent autistic males, using
the Michigan Picture Language Inventory (MPLI) (Lerea, 1958)
as the investigating instrument in order to determine if a

statistically significant difference existed between the two groups. The autistic and normal subjects were matched for mental age scores within plus or minus two months as measured by the Peabody Picture Vocabulary Test (PPVT), Form B (Dunn, 1959).

Seven autistic male and seven normal male subjects were selected from the greater Portland metropolitan area to be included in this study. Variables controlled were chronological ages of the autistic males and the mental age scores of the normal subjects. The autistic males were matched for mental age scores as measured by the PPVT (Form B).

The results of this study revealed no statistically significant differences between the performance of the autistic and normal subjects relative to the overall expression and comprehension language structure skills. An analysis of the nine word classes indicated that the autistic subjects performed significantly better than the normals on the expressive personal pronouns and the expressive adjectives. In addition, a statistically significant difference was found between the experimental and control subjects on the comprehension of singular and plural nouns with the autistic males performing better.

The findings of this investigation indicate that most of the autistic subjects obtained scores which were relatively close to their matched normals; however, it should be noted that there was a considerable chronological age difference between the autistics and their matched normals. The "intact

auditory memory" and the familiarity with this type of testing procedure may account for the lack of statistically significant difference in overall expression and comprehension scores. The poorer performance of the autistics on pronoun items is in agreement with many researchers who have studied autistic language and stated that the autistic child may lack the rule for correct pronoun assignments and may "echo" what is heard. The better performance of the autistic subjects on the comprehension of singular and plural nouns, as well as the poorer performance on personal pronouns and adjectives could possibly be explained by the proficient use of concrete versus abstract language.

PERFORMANCE OF ADOLESCENT AUTISTIC MALES ON
THE MICHIGAN PICTURE LANGUAGE INVENTORY

by

MARCIA SHARRIL KLINE

A thesis submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE
in
SPEECH COMMUNICATION

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Portland State University
1975

TO THE OFFICE OF GRADUATE STUDIES AND RESEARCH:

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April 24, 1975

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CHAPTER I

INTRODUCTION AND STATEMENT OF PURPOSE

Introduction

Kanner, in 1943, first identified and described the behavior patterns of autistic children. The autistic child is usually characterized by the inability to relate to others, an obsessive desire to maintain sameness, an excellent rote memory, a delay in the acquisition of speech, and abnormal language patterns, such as echolalia and pronomial reversals (Rutter, 1968). Autism differs from most psychoses in that it is usually present in early infancy, although it may begin as late as the second or third year of life. Autistic behaviors probably are most easily identified by the criteria of Creak (1963) and Kanner (1973) which are presented later in this review.

One of the most interesting phenomena of autistic children is their language deficit. Many researchers have observed and investigated the speech and language peculiarities of these children (Kanner, 1943; Kanner, 1955; Pronovost, 1961; Rimland, 1964; Rutter, 1966a; Bettelheim, 1967; Fay, 1971; Churchill, 1972; and Demyer, 1973). Mutism, echolalia, and pronomial reversals are the most prominently-cited language deviancies of the young autistic child (Rutter, 1968; Fay,

1969; Bosch, 1970; Churchill, 1972; Fay, 1973; and Kanner, 1973). Additionally, these children display difficulty with various grammatical forms, pronouns, and expressive, as well as comprehensive, language (Hermelin and O'Connor, 1970).

Many language studies have been conducted with the pre-school autistic child (Fay, 1969, 1971, and 1973; Hermelin and O'Connor, 1970), but relatively few studies have dealt with the language skills of the autistic adolescent. Information regarding autistic adolescents is sparse, probably because once they are released from the supervised clinical setting, little contact is maintained.

For increased understanding of this disorder, a need exists for additional research relative to the language characteristics of the older autistic child. One wonders if the speech and language characteristics remain the same or change as the young autistic child reaches adolescence. If language patterns are modified as the autistic becomes older, how are they changed and how do they compare with "normal language"? No studies have appeared in the literature which have compared the language skills of adolescent autistic males with normal males on the Michigan Picture Language Inventory, which was designed to reveal comprehensive and expressive skills of language structures. It is, therefore, felt this study will contribute to the research on autistic language.

Statement of Purpose

It was the purpose of this study to compare the expres-

sive and comprehensive language structure skills of a selected sample of normal males and adolescent autistic males, using the Michigan Picture Language Inventory (Lerea, 1958) as the investigating instrument.

The following null hypotheses were tested:

1) There will be no difference in expressive language structure skills between adolescent autistic males and normal males matched for mental age.

2) There will be no difference in comprehensive language structure skills between adolescent autistic males and normal males matched for mental age.

3) There will be no difference in performance between the autistic males and the normal males relative to: a) nouns, b) personal pronouns, c) possessives, d) adjectives, e) demonstratives, f) articles, g) adverbs, h) prepositions, and i) verbs and auxiliaries.

CHAPTER II

REVIEW OF THE LITERATURE

This review of the literature will deal with the background information on the syndrome of "infantile autism" which implies that the children so labeled will share certain behavioral traits. The autistic child usually looks like a normal child and generally moves quickly and easily with normal coordination (Barrett et al., 1972). Usually the child is unable to relate to others; this inability seems to be the principal symptom displayed by the autistic child (Kanner, 1943). Because there is a lack of diagnostic precision and agreement among the various researchers on autism, this investigator will present the differing viewpoints of various authors. The major areas to be discussed are: 1) nature of autism, 2) autism as a response to language and perceptual abnormalities, 3) autistic language, and 4) prognosis.

Nature of Autism

Behavioral Characteristics

The autistic child displays many peculiar behaviors which have been observed and described by many researchers. Kanner (1943) was responsible for identifying and describing the behavior patterns of autism. He characterized autistic

children as displaying extreme aloneness from the beginning of life and not responding to anything that comes to them from the outside world. Ultimately the child fails to use verbal communication and seems more attached to objects than to people. In general, there is little responsiveness to other people, in contrast to the young child's deep involvement with objects. The child fails to assume an anticipatory posture when picked up and fails to adjust to the body of the person holding him. According to Kanner (1973), the behaviors most characteristic of these children are aloneness, obsessive desire for preservation of sameness, a skillful and even affectionate relation to objects, and either mutism or the kind of language which does not seem intended to serve the purpose of interpersonal communication; the autistic child "communicates" only by primitive forms of behavior such as tantrums, screaming, and biting.

Rimland (1964) suggested that the first awareness of any problem in the autistic child is his lack of anticipatory movements before his mother picks him up. Other characteristic behaviors between the ages of four and eighteen months are rocking, head-banging in the crib, apathy and disinterest in the surroundings, obsessive interest in certain toys, unusual language behavior, and highly repetitive ritualistic play. By eighteen to twenty-four months, parents are concerned. The child may sit for hours staring into space, motionless, as if deep in thought.

In a later long-term study, Bettelheim (1967) interpre-

ted autistic behavior as a withdrawal of the child from contact with his surroundings; thus the child is able to withdraw completely within himself and becomes "encapsulated" with complete lack of pain and sensation. Ordinarily, behavioral deviancies, such as withdrawal, do not happen suddenly, but occur in a slow, step-by-step process. Bettelheim felt that the mother's indifference to the baby's pain or discomfort leads to frustration for both mother and child. Bettelheim believes that the child withdraws within himself to protect his feelings and self by becoming insensitive to the outside world. The autistic child, as seen by individuals around him, displays a severe emotional disturbance which is marked by a serious communication breakdown.

According to Rutter (1968), the basic deficiency evidenced in infantile autism is an impairment in the comprehension of sounds and is often associated with perceptual defects. During the second half of the first year, there are clear signs of failure to turn to people, to make gestures, call to and/or listen to people.

Bosch (1970) analyzed that, "'autistic' in the phenomenological sense is neither a symptom nor a syndrome but an easily characterizable behavioral defect in the area of interpersonal relations." The most comprehensive characterizable behavioral criteria for recognition of young autistic children were enumerated by Creak (1963). It is the opinion of this investigator that Creak's criteria of autistic behavior are the most helpful descriptions for recognizing these

children. The criteria are:

1. Gross and sustained impairment of emotional relationships with people.
2. Pathological preoccupation with particular objects or certain characteristics of them, without regard to their accepted function.
3. Sustained resistance to change in the environment and a striving to maintain or restore sameness.
4. Abnormal perceptual experience (in the absence of discernable organic abnormality).
5. Acute, excessive and seemingly illogical anxiety as a frequent phenomenon.
6. Speech either lost, or never acquired, or showing failure to develop beyond a level appropriate to an earlier age.
7. Distortion in motility patterns.

Creak's criteria usually apply only until about five years of age. With or without treatment, the clinical picture of behavior in autistic children changes somewhat as they grow older and some of these features may not be apparent in the older child (Creak, 1963).

Age of Onset

The first signs of onset of autistic behaviors appear during the first two years of life although it is not always recognized at that time. It is difficult to characterize the exact time of onset because certain symptoms are often described retrospectively by the parents (Rutter, 1968).

Sex Ratio

Rutter (1968) and Kanner (1973) reported a male-female ratio of four to one which indicates male dominance in autism.

Incidence

Rutter (1968) reported an incidence of autism in England of 4 per 10,000 children. Lotter (1966) in England estimated a prevalence range from about 4 to nearly 10 per 10,000; however, the criteria used to select cases are not always the same. The figures, therefore, should be viewed with caution and considered questionable. The incidence in the United States has not been reported.

Socioeconomic Status

The research of Kanner (1973) and Rutter (1968) revealed that the families of autistic children are of middle and upper socioeconomic status groups and the parents are usually of above average intelligence. Bettelheim's research (1967) included autistic children who were from all socioeconomic levels. There is no conclusive proof, therefore, that all autistic children come from higher income homes.

Intelligence

Findings indicate that most autistic children have subnormal intelligence. For only a few of these children will the Intelligence Quotient (I.Q.) rise sufficiently to reach average levels even after treatment and several years of education (DeMyer, et al., 1974). A greater percentage of children with I.Q. scores in the subnormal range seems to occur in autism than in any other diagnostic condition apart from mental subnormality (Churchill, 1972).

The behavioral characteristics (such as avoidance of

eye-to-eye gaze, marked aloofness and distance, and an apparent lack of interest in people) of the autistic child of high I.Q. are similar to those of the autistic child of low I.Q. (Churchill, 1972).

According to Rutter (1966b), "There is no necessary association between the level of mental development and the type of emotional or behavioral disorder." On standard I.Q. tests, between one-fourth and one-third of the autistic children can be shown to have I.Q.'s in the normal range. To some extent, the autistic child's poor level of intellectual attainment appears to be related to specific deficits in language rather than a global deficiency of intellect.

Etiology

The question of etiology remains unsettled; some causes are indicated, but no definite proof exists. When Kanner (1943) first described autism, he hypothesized it to be an inborn disturbance that made emotional contact with others impossible. The term "inborn" led organic theorists to suggest the source of autism to be the malfunctioning of the reticular formation in the brain stem (Rimland, 1964).

Kanner (1955) later abandoned his earlier hypothesis and stressed that a possible cause of autism was the emotionally cold and obsessive characteristics that he detected in the parents of these children; however, by 1971 Kanner felt that autism is definitely an "innate" disability.

Bettleheim (1967) has attributed the development of

autism to extremely negative parental feelings toward the child whereupon the child abandons hope for love. The psychosocial theorists deviate slightly from Bettelheim's theory and hypothesize that the development of autism is due to subtle personality traits in the parents, such as ambivalence. It is possible, however, that abnormality in the child could produce deviant behavior in the parents. If the child seems disinterested in or unable to relate to his parents from infancy, the parents could be expected to respond with a lack of warmth by becoming detached and ambivalent (Barrett et al., 1972).

Some behavior theorists (Ferster, 1961) hypothesize that autism may result from a learning deficit or faulty learning pattern. It is believed that the autistic child's deficit results from the lack of environmental interaction and there is usually no reinforcement provided by the parent for the child. This is an interesting but weak argument on the part of the theorists; since it does not differentiate between a faulty learning pattern or lack of environmental stimuli. With the many theories presented as to the etiology of autism, it seems possible that there may be multiple causes of the disorder.

Autism as a Response to Language and Perceptual Abnormalities

A considerable amount of evidence now exists in support of the view that infantile autism arises on the basis of a

developmental perceptual disorder, in particular a disorder of language involving defects in comprehension (Rutter, 1968). It is felt by many researchers that the linguistic deficit may be the cause of the deficient structuring of the environment by autistic children, as well as their inability to form meaningful relationships. Hermelin and O'Connor (1967) postulate that the autistic child suffers from multiple handicaps affecting many, and in severe cases, most channels of input and output. Besides the I.Q., language is usually the most important prognostic factor in relation to the course of the disorder; a failure to speak is due to a basic impairment in language skills and not to an absence of motivation to speak or social withdrawal (Rutter, 1968).

In experimental research conducted by Hermelin and O'Connor (1967), two groups of children were tested in five different studies. Performance on the Peabody Picture Vocabulary Test was the basis for matching four- to five-year old normals with eight to twelve year old autistic children. The following are the results of the five experiments:

- 1) There was no defect in the memory capacity of the autistic children and recall of coded and classified items when compared with random references was relatively poorer than in normal children.
- 2) Autistic children read back material from an immediate memory storage if they possible can and do not profit as much from sequentially ordered material as do other children.

- 3) Both groups of children did better with pictures which followed each other logically than they did with random arrangement.
- 4) In the fourth experiment, the autistic children were matched with mentally retarded children. Words were presented verbally for the children to recall. The total number of words recalled did not differ significantly between the groups, but there were fewer instances of forming word groups by the autistic children. Hermelin and O'Connor felt that there was both a syntactic and semantic structuring impairment.
- 5) Normal children remembered stressed key words better than unstressed key words. The autistic children remembered stressed words better than unstressed words, whether they were key ones or not.

Results of additional experiments by Hermelin and O'Connor in 1970 indicated that autistic children have a deficit in verbal coding and patterning, and it has been suggested that many manifestations of autism are explainable as cognitive and perceptual deficits. Further investigation of the perceptual difficulties of these children indicated that auditory memory span is intact as confirmed by the use of the Illinois Test of Psycholinguistic Abilities (ITPA). It was noted that the autistic children remembered at least as many randomly arranged words as did the normal and mentally retarded children; however, when sentences were to be recalled,

the autistic children did not do as well as the other groups. These children made no response distinction in orienting towards words as compared with noise. Hermelin and O'Connor (1970) demonstrated that autistic children have severe impairments in decoding and encoding verbal material. They concluded that the basic impairment underlying autistic behavior is the cognitive problem of encoding stimuli, both auditorily and visually.

Additional findings of the Hermelin and O'Connor experiments are:

- 1) Autistic children are more responsive to a person and the representation of a person than to any other stimuli.
- 2) They attend to visual stimulation for a briefer period of time than do normal and mentally retarded children.
- 3) They are unresponsive to verbalizations as well as nonverbal auditory stimuli.
- 4) They have limited ability to process visual data.

Wing (1966) established in his research that the autistic child has difficulty recognizing people, places, or objects (e.g., their home at a distance) and peripheral vision tends to be used in preference to central vision (e.g., child will look past objects and people). "Visual avoidance" is common, e.g., covering the eyes with the hand and turning the head away. Because of the difficulties in making meaningful patterns of visual stimuli, the child often tries to avoid complex visual patterns (the most complicated being the human being) (Wing, 1966). Fay (1973) stated that, "Many autistic children also suffer visual perceptual deficits at

higher neural levels which preclude the meaning if not the sensory experience of the world about them." From the studies reviewed, autistic children seem to have both auditory and visual perception deficiencies which contribute to their communicative inadequacy.

Autistic Language

Much has been written about autistic language but little appears to be understood about the phenomenon. The study of autistic language is a primary concern for the diagnosis, prognosis, and treatment of the autistic child.

With the failure to develop speech, related behavioral and perceptual abnormalities occur (Bartolucci and Albers, 1974). One such abnormality according to Churchill (1972) is a "central language disorder" which may be the

necessary and sufficient cause of that behavior which marks children as schizophrenic or autistic and not just one of many possible types of impairments which leads to the same condition.

He felt these children could be taught language performance but not language competence and that language ability and/or improvement is one of the best indicators of prognosis and is strongly related to social competence. The studies reviewed in the following section illustrate the language characteristics and the many deficits these children display. Some of the areas to be discussed are language comprehension, both verbal and written, expressive language, including specific grammatical forms, echolalia, pronomial reversals, and

other characteristic language behaviors of the autistic individual.

Researchers have investigated comprehensive and expressive aspects of the structure and syntax of autistic language. A descriptive study was conducted by Pronovost (1961) in which the speech and language comprehension of twelve autistic children were observed over a period of two years in a residential setting. The findings reported were: autistic children exhibited ability in certain aspects of language comprehension, as they were able to discriminate environmental sounds and voices of adults and to recognize names of people, objects, and actions; however, comprehension of abstract or complex language expressed in sentences was not apparent. Response to written language was very limited, but the children exhibited considerable interest in, and response to, musical sounds. A later study documented by Bosch (1970) analyzed autistic language and found that the autistic child lacked the understanding of many grammatical forms, such as "I", possessive pronouns, indicative forms, genitive forms of possession and of the imperative.

The inability to understand these grammatical forms is demonstrated by the autistic child who displays immediate or delayed echolalia. "Echolalia" has been defined by Fay (1969) as the "meaningless repetition of a word or word groups just spoken by another person." Fay studied autistic echolalia and assessed echoic output and verbal comprehension of three boys. He demonstrated that autistic echolalia "has

its basis in verbal comprehension difficulties coupled with an urge to sustain rather than to reject social contact." Echolalia is one of the many manifestations of autistic language which needs to be observed and studied to further our knowledge concerning the unique language and behavioral patterns of the autistic child.

From her observations, Lorna Wing (1971) reported that autistic children begin talking by repeating words spoken by other people, especially the final word or words of a sentence. The accent of a speaker may be imitated as well as the vocal pitch level. The repetition of words seems to have little meaning for the child. Autistic children seem to give no more attention to speech than to any other noise; they ignore both speech and noise and are unaware that speech has any meaning. Wing felt that by age five the child begins to acquire a more limited comprehension of speech. She stated that,

As with normal people learning a foreign language, autistic children find difficulty with the little linking words such as 'in', 'on', 'under', 'before', and 'because'.

Autistic language tends to be literal and concrete, for example, the child may say, "May I ignite the match from the matchbox?"; rather than saying, "Can I light the match?" These children usually have difficulty in controlling the loudness of their voices, which gives it a mechanical quality. These children demonstrate inappropriate and inadequate comprehension and expression of grammatical structures and

syntax, which is evident in their speech. Usually their verbal skills are minimal, but some investigators have designed experiments to teach some basic language.

An experiment was designed by Churchill (1972) to teach some basic verbal skills to autistic children. The procedure was to establish a basal vocabulary of three nouns, three adjectives, and three verbs in sixteen autistic and schizophrenic children aged five to eight years. These words were assigned visual (hand signs), as well as auditory (spoken word), representation. Initially the words were presented one at a time and later expanded in degree of difficulty. The results revealed a disability in processing auditory and/or visual information by the autistics. With each child, there appeared to be a severe limit on the ability to respond appropriately to novel simple sentences using familiar words to generate spontaneously new, comprehensive sentences of their own. Most marked was the inability to handle the syntax or structures of language.

Several investigators have described the development and use of expressive speech by autistic children; the non-communicative usage especially has been emphasized. Some of the characteristic language behaviors of the young autistic child are discussed by Cunningham and Dixon (1961) who stated there may be no speech at all and those who do speak fail to use language to convey meaning to others. The autistic child repeats the same phrases rather than constructing original remarks. Some children, who have been mute for four or

five years, who begin to talk, give evidence that during the silent period they have accumulated a considerable amount of available linguistic material. This linguistic accumulation is demonstrated when the child "breaks silence" on those occasions of unusual experiences or occurrences (Kanner, 1973).

Autistic speech is "generally of a peculiar noncommunicative kind and is ordinarily produced in an empty high-pitched, parrot-like monotone" (Rimland, 1964). Whispering is common and when language is elicited, there is little or no expression. Rimland also felt that autistic language is not a means of communication, but only used for specific responses to certain stimuli. Similarly, Bosch (1970) concluded that the autistic child uses words for purposes totally unrelated to the communication process. He takes important elements of a situation and adds words to complete the situation, but not for the purpose of communication. Many of these children remain mute for most of their lives except for some verbalizations during a critical situation.

Kanner (1946) described the utterances of eight autistic children who infrequently interrupted their mutism by the utterance of a whole sentence in emergency situations. They displayed simple use of verbal negation, very literal use of language, echolalia-type repetition of whole phrases and pronomial reversals when communication was necessary. He further characterized autistic language as "seemingly irrelevant and nonsensical utterances" in which the autistic children uses "metaphorical expressions in the sense that

they represent figures of speech by means of which one thing is put for another which it resembles." From further observations he concluded there is a transfer of meaning which is accomplished in a variety of ways:

- 1) through substitutive analogy - bread basket becomes "home bakery"; Annette and Cecile become "red" and "blue".
- 2) through generalization - "Home bakery" becomes the term for every basket; "Don't throw the dog off the balcony" assumes the meaning of self-admonition in every instance when the child feels the need for admonishing himself.

Kanner described Paul G. at five years of age who demonstrated one peculiar and "out of place" conversation, which at the time, only had meaning for the boy:

"Don't throw the dog off the balcony." There was neither a dog nor a balcony around. The remark therefore sounded irrelevant. It was learned later that three years previously he had thrown a toy dog down from the balcony of a London Hotel at which the family was staying. His mother, tired of retrieving the toy, had said to him, with some irritation: "Don't throw the dog off the balcony." Since that day, Paul, whenever tempted to throw anything, used these words to admonish and check himself.

The above example is what Kanner (1946) described as "concrete, specific, personal experiences of the child who uses them." Another way of transferring meaning is:

- 3) through restriction - in which the 55 year old grandmother becomes "55" and a 6 is referred to as "hexagon."

Metaphorical language in early infantile autism is not directly communicable and is not primarily intended as a means of inviting people to understand and to share the child's symbols (Kanner, 1973). The autistic child frequently makes

statements which have no meaningful connection with the situation in which they are voiced. According to Kanner, the utterances seem to be "nonsensical," "silly," "incoherent," and "irrelevant," terms often used by the parents, teachers, and doctors. Kanner felt that if these children used language more spontaneously, their language would become more communicative. Usually by the ages of five and six years the autistic child discontinues the use of echolalia and learns spontaneously to use personal pronouns.

The usage of specific grammatical forms and syntactical structures, such as pronouns and verb tense, has been investigated and discussed by many authors. One of the most typical characteristics of autistic language is pronomial reversals which consist of the child's reference to himself as "you" and the person spoken to as "I". The confusion of "you and I" has sometimes been regarded as possible evidence of unawareness of personal identity (Rutter, 1968) in which the child does not see himself as a person engaged in an encounter (Bosch, 1970). This interpretation is contradicted by Colby (1974) who suggests that "autistic children make a very clear distinction between self and non-self," just by the way they act in situations in which they do not want to participate. The autistic child either constructs a language in which the pronoun "I" does not exist or a language in which the connected "I" is not present with future and imperative forms. With the normal child's language, "I" appears first in a context of owning something; only later is

it used in connection with a physical action and later yet for receiving attention from others (Bettleheim, 1967). Colby (1974) described the autistic child as lacking the rule for correct pronoun assignments and echoing what is heard.

It has been suggested by Fay (1971) that "I" is not incited by "you" but primarily by "me". "You" is the critical pronoun that is heard much more in speech. (An example is the parent who says, "I am going to the store; do you want to come?") The child will echo the statement, being unable to transform the pronouns. Fay (1972) discussed the importance of "I" in communicating with others as questionable. He felt that "I" may be a "secondary skill to you/me."

Rimland (1964) has observed that autistic children avoid using meaningful use of both the pronoun "I" and the word "yes". He felt that this behavior is due to the child's frustration with these words and the frustration leads to the repetition of words rather than understanding them. Personal pronouns are repeated just as they are heard with no change to suit the altered situation. This is illustrated by Bosch (1970) in the following example of an autistic boy who was retarded in the use of the pronoun "I".

Hans R., age 10. Because the boy looked in such a bad mood the author told him he should laugh, whereupon he looked up, surprised, and cried, "Ha...spin....What's wrong with you, lad, doesn't the boy want to laugh?" (No, I don't want to paint.) At this point the boy cried, "I must paint." With this "I", just as with the word "uncle", he was referring to the author. In this conversation he thus used the term "boy" for himself, while "uncle" and "I" were reserved for addressing and desig-

nating the doctor. The following conversation illustrates how, with great effort, he could be made to call himself "I". When he once said to me "Hans wants the car", I acted as if I did not understand who this "Hans" was and asked, "Who wants the car?" His answer was "The boy". When I put the question to him again he became excited and cried, "He wants the car." When I countered, "Who, then, I can't see any boy or any he", he said suddenly, almost disparagingly and angrily, "Well, I do."

Another area of grammatical structure which presents problems to these children are verbs which seem to be difficult because they change in past and future tenses. Most autistic children speak in the present tense all the time unless they acquire more adult language patterns. Nouns are also difficult for these children because in general usage they usually refer to more than one object. Autistic children, on the other hand, may call a dining-room chair - a chair - but do not realize the same word applies to other chairs of different shapes and sizes.

Syntactic structures are also an area of difficulty for the autistic individual. Bartolucci and Albers (1974) demonstrated in their study that autistic children have specific deviant syntactic structures, especially those related to deixis. The deictic system of language, as described by Bartolucci and Albers, consists of the orientational features of language which are handled at the morphological level, primarily by personal pronouns, the adverbials of place and time, and the verb inflections. The study investigated syntax development with special interest in verb tenses using three subject groups comprised of autistic, mentally retarded

and normal children. The results showed that the older the autistic child, the greater the tendency to give correct responses in the present tense and incorrect responses in the past tense. The autistic group was found to have significantly poorer production of past tense than normals or mentally retarded children. According to Bartolucci and Albers, the autistic child exemplifies a problem between the morphological and semantic aspects of language in the area of the past tense.

Autistic language can best be summarized in the following chart which reflects four descriptive studies of autistic language (Vetter, 1969):

<u>INVESTIGATOR</u>	<u>LINGUISTIC CHARACTERISTICS REPORTED</u>
Kanner	Elective mutism, verbal negation, literalness, self-absorbed inaccessibility, echolalia, pronomial reversals, "irrelevancies" due to personal metaphors.
Pronovost	Echolalia, uncommunicative vocalizations, rote repetition, babbling, irrelevancies.
Cunningham and Dixon	Egocentric speech, repetitions, monotony, incomplete sentences, echolalia, diminished use of personal pronouns, incomprehensible responses.
Wolff and Chess	Incommunicative repetition, communicative repetition (including Kanner's "verbal negation," pronomial reversals), metaphorical substitutes.

The language of the autistic child has been analyzed and studied by many investigators. These researchers still find this peculiar verbal behavior confusing but it seems to be

of the utmost importance in indicating a final outcome for these individuals.

Prognosis

A brief discussion of the follow-up studies of autistic children may offer some insight into the poor prognosis of these children. The essential prognostic factor for these children seems to be language and how it has affected each child's outcome. Kanner (1973) described adolescent autistics as having retained the primary characteristics of autism and yet they have lost some of the earlier secondary symptoms of echolalia and pronomial reversals. If the autistic child acquires some speech by the age of five, there is a fair to good chance of adequate social adjustment (Rutter, 1966b). According to Rutter, it is unusual, but not unknown, for improvement to begin for the first time in late childhood or adolescence. Improvement, learning and acquisition of language skills continuing well into adult life is frequently encountered.

In 1966 Pronovost completed a longitudinal study of the speech and language behavior of fourteen institutionalized autistic children. Information was gathered over two years on two girls and twelve boys (five to fifteen years). Pronovost speculated that the "perceptual problems of the children studied are the most significant factors contributing to the child's speech and language behavior." The results of Pronovost's research are as follows for the "Vocalization" group:

- 1) There were extreme levels of vocalizations from a whisper to excessively loud sounds.
- 2) At no time were there vowel-like or consonant-like vocalizations which approximated meaningful speech, nor any echolalia of adult speech.

On the other hand, the "Talking" group performed as follows:

- 1) These children used words, phrases, sentences, and non-speech vocalizations.
- 2) Most characteristic of this group was immediate echolalia of adult speech.
- 3) Most speech of this group appeared to be linguistically inappropriate to the situation.

The Pronovost study demonstrated the contrasting characteristics of children who were institutionalized and some of the possible types of speech that these children maintain.

Kanner (1971) conducted a follow-up study of eleven autistic individuals who were in their late teens and early twenties. He found the following:

- 1) Four lived most of their lives in institutional care and had little lust for life.
- 2) Two developed epileptic seizures and one died.
- 3) Two could not be contacted.
- 4) One was still mute but had attained some usefulness helping in a nursing home.
- 5) One works regularly as a bank teller and helps in the community.
- 6) One has a regular job and is considered dependable, reliable, and thorough.

Kanner's study demonstrated the wide variation in outcome for the autistic individual.

There are few studies which have reported on the older autistic adolescent and what possible role they play in so-

ciety. Lotter (1974), in his most recent research, investigated the autistic adolescent between sixteen and eighteen years. He found that the proportion of autistic adolescents employed was comparatively low and the prospects for employment do not improve much with increasing age. Many people feel that a "good" outcome is socially meaningful only if the person is able to become employed. He concluded that the autistic individuals were handicapped in ways that were specifically related to the requirements of independent work, such as lack of social competence and the "ability to experience oneself as purposefully active; initiate activities, or ambition." Lotter's results indicated that these individuals have difficulties in "social context" which appears to be a lack of initiative or purposeness. There were also no relationships between how well the autistic child performed in school and his employability in adulthood.

The studies of Rutter (1966b) and Demyer et al. (1973, 1974) are by far the most complete and comprehensive in selection of subjects and sample numbers. Many autistic cases have been traced by Rutter from childhood into early adolescent life. He found, in one study, that thirty-four of sixty-three individuals were in full-time residential settings. Most of the autistic individuals studied displayed fair adjustment, but the majority of children had a poor outcome. In a study reported by Rutter (1966b) only fourteen percent were functioning at a generally "good" level. In the 1966b study, nine of fifty-seven children ceased to be autistic by

the time they were adolescent; for example they no longer showed an aloof indifference to people. The loss of "autism" did not mean there were improvements in other deficiencies such as measured intelligence. Generally, interpersonal relationships tended to improve as the children grew older, but there remained a lack of "social know-how", sympathy and empathy. In about half of the cases studied, Rutter found an impairment or absence of speech to be the major handicap of these individuals. Three-fourths of the children who did gain useful speech were echolalic. Ten of sixty-three children studied gained a normal level of speech development; of these, four had abnormalities in speech delivery, such as, monotonous flat delivery with little emotional expression which gave an overall effect of mechanical speech. Some of the children tended to converse in a series of obsessive questions. Lack of drive, poor social adjustment, obsessive habits and rituals, and slow educational achievements were the chief negative attributes of autistic adolescents. Most symptoms, Rutter concluded, became milder as the children grew older and most children became more adaptable and were easier to deal with after adolescence.

Demyer, et al. (1973) completed the most recent follow-up study of autistic children (eighty-five males and thirty-five females, with a mean age of 12 years) in the United States. It was noted that there was a 1 to 2 percent recovery to normal, a 5 to 15 percent borderline recovery, 16 to 25 percent fair outcome and 60 to 75 percent poor recovery.

The results of the Demyer, et al. study indicated that most infantile autistic children face a poor outcome of the condition during adolescence and adulthood.

For the purposes of the Demyer, et al. study, the children were divided into groups of high autism, medium autism, and low autism. Ninety-five percent of the high autistic group had some communicative speech and had the best outcome. Approximately 70 to 75 percent of the mild and low autistic groups were mute or echolalic at the initial evaluation; by follow-up, about half had developed some communicative speech although much below age level. A major finding of the Demyer, et al. (1973) study was that the children whose speech had some communicative features at the initial evaluation were more likely to develop true conversational speech than those children who were either mute or had non-communicative echolalic speech. The presence of noncommunicative echolalia predicted better speech development than did muteness. About 65 percent of the mute children remained mute and only 19 percent gained useful speech; deterioration of speech was found in 11 percent of the cases. Those children whose speech improved considerably had remaining difficulties with abstract concepts, asked repetitive questions, conversed in an odd way and perseverated on one subject. There were only two children in the study who outgrew the social, language, intellectual and perceptual motor handicaps and had above average intelligence. The next four highest functioning children retained difficulties in language abstraction and perceptual

motor skills. There were no children who had normal or nearly normal speech at the time of follow-up whose communicative speech developed after the age of five years. According to Demyer, et al. the autistic child fails to use "objects functionally, to understand and abstract concepts such as past, future, and present; and to relate these and other verbal productions to his own or to other persons in any but the most simplistic way," because there is some type of block to the acquisition of abstract language concepts and the symbolization of objects.

In reference to later research, Demyer et al. (1974) found that, among autistic children, those with the most severe and the greatest number of symptoms have the lowest I.Q.'s, and those children with the most capacity to relate emotionally, have the highest adaptive and verbal abilities. The autistic child who obtains an I.Q. of greater than "fifty" should have treatment and education specified to his individual needs because he may have a chance for borderline or even normal functioning. Those children with lower than "forty" I.Q.'s have a poor prognosis and the parents should be counseled regarding this.

It appeared from the studies reviewed that there is a lack of information on the language structure of the autistic adolescent. Some studies, such as one conducted by Bartolucci and Albers (1974), have provided a brief account of syntactic language of these individuals. Little data have been reported on the comprehension and expression of specific

language structures (demonstratives, verbs, articles, adjectives, prepositions and auxiliaries, etc.) of these adolescents.

CHAPTER III

METHODS AND PROCEDURES

Subjects

Seven experimental and seven control subjects were selected from the greater Portland metropolitan area to be included in this study. The experimental children had been diagnosed in early childhood as "autistic". Three were residents of institutions and four resided with their parents. They were matched with the normal subjects for mental age scores within plus or minus two months as measured by the Peabody Picture Vocabulary Test, (PPVT, Form B) (Dunn, 1959).

Variables controlled in the present study were chronological ages of the autistic males and the mental age scores of the normal subjects. Sex and race were not variables as this study was limited to white males.

Chronological Age

The autistic males ranged in age from 12 years, 9 months to 18 years, 9 months with a mean chronological age of 14 years, 3 months. (See Table I and Appendix A.) The normal subjects ranged in age from 4 years, 8 months to 17 years, 6 months with a mean chronological age of 8 years, 1 month. (See Table I and Appendix A.)

TABLE I
CHRONOLOGICAL AGE RANGE, MEAN MENTAL
AGES AND STANDARD DEVIATIONS OF SUBJECTS

Subjects	C.A. Range	Mean C.A.	S.D.	M.A. Range	Mean M.A.	S.D.
Normal	4-8 to 17-6	8-2	3.88	4-7 to 18+	8.93	± 4.36
Autistic	12-9 to 18-9	14-3	1.79	4-6 to 18+	8.92	± 4.37

Mental Age Scores

The mental ages of the autistic subjects were determined through the administration of the PPVT, Form B (Dunn, 1959). Their mental age scores determined the selection of the normal males as the normals were chosen on the basis of matching mental age scores within plus or minus two months. The mental age range for the autistic group was 4 years, 6 months to 18 years with a mean of 8 years, 9 months (Table I). The mental age range for the normals was 4 years, 7 months to 18 years with a mean of 8 years, 9 months (See Table I and Appendix A).

Assessment Protocol

Michigan Picture Language Inventory

The language structure section of the Michigan Picture Language Inventory (MPLI) (U. of Michigan, 1962) was administered to all subjects. This test was first developed in 1957 in order to assess oral vocabulary and language structure development in children between the ages of three and

nine years. Specifically, it was devised to evaluate objectively the extent of language retardation in handicapped children. The test subsequently was revised by Wolski (1962). The revised test is administered in two parts: 1) picture vocabulary inventory and 2) language structure section. The child's expressive and comprehensive abilities are measured for both sections. The stimulus items are cards with three pictures on each, one picture is the key item and two are foils. The vocabulary section consists of 35 cards; the language structure section, 50 cards with 69 expression and 69 comprehension items. The language structure section tests nine word classes: 1) singular and plural nouns, 2) personal pronouns, 3) possessives, 4) adjectives, 5) demonstratives, 6) articles, 7) adverbs, 8) prepositions, and 9) verbs and auxiliaries (see Appendix B).

Reliability

In standardizing the MPLI, a comprehension score and expression score were obtained for 140 children for each of the vocabulary and language sections. The odd-even reliability coefficients were corrected for length by means of the Spearman-Brown Proficiency Formula. The coefficients for vocabulary comprehension, vocabulary expression, structural comprehension, and structural expression were .93, .90, .94, and .95 respectively.

Validity

Findings in the Wolski study (1962) showed significantly

higher mean scores at successive age levels for both sexes which suggest the vocabulary and language structure tests possess sufficient validity for assessing language development in children four to six years of age.

Test Administration

The PPVT, Form B, and the language structure section of the MPLI were administered by this investigator to all subjects in familiar surroundings. Three of the autistic group were tested in a speech clinic room of their residential institution, three were tested in a quiet room of their home and one child was tested in a university speech clinic room. One of these experimental subjects was tested in the presence of his speech clinician. Five control subjects were tested in a quiet room of a friend's home, one child was tested in his home and one subject was tested in a clinic room.

Each subject was seated beside the examiner at a table during the administration of the tests. The procedure for the expressive portions of the MPLI consisted of instructing the subject to verbally identify the language structure represented by each picture. If the child did not correctly identify a specific language structure, the examiner instructed the child to point to the picture representing the structure at a later time. The latter procedure was for the comprehension section of the test. The testing sessions with the experimental subjects were tape recorded for further reference.

One experimental subject seemed to require an excessive amount of verbal praise and prompting to complete the test. The remaining test subjects were cooperative and followed directions readily.

Data Analysis

Upon completion of testing, the PPVT and the MPLI were scored. For each correct answer on the MPLI, a point value of one was assigned. The total expression and comprehension scores were separately obtained by totaling the number of correct responses from each test area. The total possible for each section, expression and comprehension, was a raw score of 69 points.

The data were analyzed in terms of means, standard deviation, and t-tests to compare the performance of the control and experimental subjects on the overall expression, and comprehension scores, and the eighteen language structure items. The reader should be aware that due to the small sample and lack of random selection of the population certain limitations may be inherent in the t-test results.

CHAPTER IV

RESULTS AND DISCUSSION

Results

The primary concern of this study was to investigate the expressive and comprehensive language structure performance of autistic subjects as compared to their matched normal subjects. Using the language structure section of the MPLI, responses were obtained and scores were computed for each of the fourteen subjects. To determine if the differences in the scores between the autistic and normal subjects were statistically significant, t-tests were performed.

Nine language structures were tested in each of the comprehension and expression sections of the test. Raw scores are presented in Appendix C. One-tailed t-tests revealed differences at the .05 level of significance between the performances of the controls and the experimentals on two of the nine areas of the expression portion of the test, with the control subjects performing better. The two significant subtests were personal pronouns, and adjectives as indicated in Table II. In the comprehension section of the test, the responses on the singular and plural noun items were found to be significantly different at the .05 level of significance (Table II). The autistic subjects performed better than the

TABLE II
MEAN SCORES, STANDARD DEVIATIONS AND
VALUES OF t FOR THE NINE
EXPRESSION AND NINE COMPREHENSION
SUBTESTS ON THE MPLI

Subtests: Expression (No. items per subtest)	Autistic Mean	Autistic Standard Deviation	Normal Mean	Normal Standard Deviation	t scores	df
Singular and Plural Nouns(20)	15.57	4.47	14.86	4.16	0.31	12
Personal Pro- nouns(7)	4.71	1.36	6.14	1.36	1.99*	12
Possessives(4)	2.85	1.73	3.14	.64	0.41	12
Adjectives(12)	9.14	3.44	11.71	.70	1.93*	12
Demonstratives(4)	2.85	.63	2.28	1.33	1.02	12
Articles(4)	2.71	1.09	3.14	1.08	0.74	12
Adverbs(4)	2.85	1.35	3.42	.42	1.06	12
Prepositions(6)	4.42	1.92	5.57	.57	1.51	12
Verbs and Auxiliaries(8)	5.00	3.12	5.42	1.92	0.30	12
Subtests: Comprehension						
Singular and Plural Nouns(20)	19.00	1.77	16.28	3.61	2.39*	12
Personal Pro- nouns(7)	6.14	1.30	7.00	0	1.76	12
Possessives(4)	3.85	.35	4.00	0	1.07	12
Adjectives(12)	11.00	2.45	11.85	.35	0.90	12
Demonstratives(4)	3.00	1.31	3.42	.91	0.69	12
Articles(4)	4.00	0	4.00	0	0	12
Adverbs(4)	3.57	.73	4.00	0	1.54	12
Prepositions(6)	5.85	.35	5.57	.73	0.88	12
Verbs and Auxiliaries(8)	5.71	2.76	7.28	1.03	1.41	12

all t -tests were calculated at the .05 level of significance.
*these subtests were found to be significant at the .05 level.

normal group on singular and plural nouns in the comprehension section.

Of a possible total of 69, the total mean expression scores for the autistic and normal groups respectively were 50.57 and 61.71; the total mean comprehension scores were 56.00 and 63.86 (see Table III). The differences between the two groups of subjects on the overall scores were not found to be significant.

Figures 1 and 2 further illustrate a comparison of total expression and comprehension scores of the individual autistic and normal subjects.

Discussion

The purpose of this study was to compare the expressive and comprehensive language structure skills of autistic and normal subjects to determine if a statistically significant difference existed between their performances on the MPLI. The first two hypotheses tested were:

- 1) There will be no difference in expressive language structure skills between adolescent autistic males and normal males matched for mental age.

- 2) There will be no difference in comprehensive language structure skills between adolescent autistic males matched for mental age.

In view of the first two hypotheses, the results of this study revealed no significant difference between the experimentals and control groups in overall expressive and compre-

TABLE III

COMPARISON OF TOTAL SCORES OF THE AUTISTIC
AND NORMAL SUBJECTS ON THE
MICHIGAN PICTURE LANGUAGE INVENTORY

<u>Autistic Subjects</u>		<u>Normal Subjects</u>	
Expression	Comprehension	Expression	Comprehension
1. 69	69	1. 69	69
2. 50	65*	2. 51	61*
3. 60*	66	3. 59*	68
4. 59*	67*	4. 56*	63*
5. 15	39	5. 41	54
6. 36	57	6. 47	63
7. 65	69	7. 69	69

Mean: 50.57 Mean: 56.00
S.D.: 17.67 S.D.: 9.84
 $t = 0.71$ n.s.

Mean: 61.71 Mean: 63.86
S.D.: 9.84 S.D.: 5.03
 $t = 0.51$ n.s.

*autistic subjects obtained higher scores than the normal match.

Figure 1. Comparison of total expression scores of the autistic and normal matched pairs.

Figure 2. Comparison of total comprehension scores of the autistic and normal subjects.

hensive language structure skills. The autistic mean chronological age was 14 years, 3 months and the normals mean chronological age was 8 years, 2 months, therefore, the performance of the autistics was comparable to the 8 year old normals. It should be noted that although there was no statistically significant difference between the performance of the two groups, there was a considerable chronological age difference.

The Hermelin and O'Connor (1967) study found that normal and autistic children performed equally well with sequential pictures. The study also demonstrated that autistic and normal subjects performed well with related pictures.

During the administration of the MPLI, all the information for the pictures was administered verbally. In addition, as a part of the test administration, all the correct responses were provided at the onset of each testing section and it is possible that there was no significant difference in expressive abilities between the two groups due to the "intact memory span" of the autistic males. Many of the autistics seemed to remember the exact stimulus word given by the examiner; whereas, the normal subjects tended to give more spontaneous replies on the MPLI. Some of these spontaneous responses were scored incorrect. For example, several control subjects stated, "are gonna dig" and "gonna write" for "will dig" and "will be writing" respectively; whereas, the autistic subjects either repeated the identical words of the examiner or could not complete the task at all. This is in

agreement with the Hermelin and O'Connor (1970) study in which they stated, "one of the outstanding characteristics in performance of autistic children is their good rote memory."

Further research completed by Hermelin and O'Connor (1970) indicated these children had adequate verbal recall and the "recall scores showed strong recency effects," similar to the effects noted in this administration of the MPLI. Rutter (1966a) also found autistic children did better on tests of auditory memory than any other types of tests.

In a study by Rutter (1968), considerable deficiencies were found in the comprehension of language for these children. He feels this was due to a developmental perceptual disorder. This was not evident in the children tested in the present study.

The third hypothesis tested was:

There will be no difference in performance between the autistic males and the normal males relative to: 1) nouns, 2) personal pronouns, 3) possessives, 4) adjectives, 5) demonstratives, 6) articles, 7) adverbs, 8) prepositions, and 9) verbs and auxiliaries.

Relative to the third hypothesis the results revealed a statistically significant difference on the expressive personal pronouns and expressive adjectives. There was also a significant difference on the comprehension of singular and plural nouns. This investigator found the autistic subjects performed significantly better than the normal subjects on

the comprehension of singular and plural nouns. This result tends to support previous language research conducted with autistic children. Traditionally autistic children have performed better on concrete as opposed to abstract language. Singular and plural nouns are generally concrete language structure forms, whereas adjectives and personal pronouns are more abstract structures. Another possible contributing factor to these differences may have been the amount of individual language habilitation the autistic males have had in the past. In addition, the autistics may have been given tests which were similar to the MPLI; certainly they have been evaluated with a wide array of formal tests. This investigator, therefore, suggests the autistic subjects may have had an advantage over the normals on the MPLI by their familiarity with taking this type of test.

The item analysis revealed a statistically significant difference between the two groups on expressive personal pronouns. This particular language skill is one of the most researched and discussed phenomena of autism. This investigator observed several "reversals of pronouns" and difficulty some of the autistic adolescents had with this subtest. For example, one subject substituted, "he for she", "he for it", "these for they", "he for I" and a second subject substituted "him for he", "me for we", and "I for you". It is felt the difference between the two groups on personal pronouns may be related to the linguistic difficulty of the pronouns themselves rather than any psychological problems the autis-

tics may have. In support of this, Fay (1971) has explained the pronomial development and reversals by a grammatical approach which seems to regard "psycholinguistic confusion to be a primary problem in the acquisition process." There appears to be some difficulty with the grammatical use of the pronouns themselves which was evident on their performance on the MPLI. An investigation recently completed by Bartak and Rutter (1974) concluded that the failure to use "I" was due to the "accidental combination of its usual sentence position and the tendency of some autistic children to echo only the final part of sentences which they hear." This finding may have been another possible reason for the results obtained on the personal pronoun section of the MPLI.

No significant difference was found between the two groups on the verbs and auxiliaries subtest. Visual observation of the raw scores, however, indicated that some of the autistic and normal subjects found the verbs and auxiliaries subtest to be more difficult than the preceeding subtests. This may have been due to the more complex sentences and language required for an appropriate answer. Difficulty with complex language was also observed by Pronovost (1961) who suggested that autistic children lack the ability to comprehend abstract or complex language expressed in sentences which was demonstrated by some of the answers given by these subjects. For example, one autistic male stated, "will digging" for "will dig" and another male substituted "is started digging" for "will dig."

This researcher observed many language and behavioral peculiarities of the autistic subjects which the MPLI scores did not reveal. The general speech patterns of the experimentals were usually monotone with occasional high-pitched tones, interspersed with whispering and little or no expression. This observation has also been made by other investigators (Rimland, 1964; Bosch, 1970; and Hermelin and O'Connor, 1970). Some of the autistics waved their hands, avoided visual contact with the examiner, and one male continually asked non-relevant questions. Wing (1966) also found that "visual avoidance" was common in his observations. Kanner (1973) stated that frequently these children make statements which have no meaningful connection with the situation in which they are voiced. This was evident with the boy who asked non-relevant questions throughout the testing situation.

CHAPTER V

SUMMARY AND IMPLICATIONS

Summary

The purpose of this study was to compare the expressive and comprehensive language structure skills of a selected sample of normal males and adolescent autistic males, using the Michigan Picture Language Inventory (MPLI) (Lerea, 1958) as the investigating instrument in order to determine if a statistically significant difference existed between the two groups. The autistic and normal subjects were matched for mental age scores within plus or minus two months as measured by the Peabody Picture Vocabulary Test (PPVT), Form B (Dunn, 1959).

Seven autistic male and seven normal male subjects were selected from the greater Portland metropolitan area to be included in this study. Variables controlled were chronological ages of the autistic males and the mental age scores of the normal subjects. The autistic males were matched for mental age scores as measured by the PPVT (Form B).

The results of this study revealed no statistically significant differences between the performance of the autistic and normal subjects relative to the overall expression and comprehension language structure skills. An analysis of the

nine word classes indicated that the autistic subjects performed significantly better than the normals on the expressive personal pronouns and the expressive adjectives. In addition, a statistically significant difference was found between the experimental and control subjects on the comprehension of singular and plural nouns with the autistic males performing better.

The findings of this investigation indicate that most of the autistic subjects obtained scores which were relatively close to their matched normals; however, it should be noted that there was a considerable chronological age difference between the autistics and their matched normals. The "intact auditory memory" and the familiarity with this type of testing procedure may account for the lack of statistically significant difference in overall expression and comprehension scores. The poorer performance of the autistics on pronoun items is in agreement with many researchers who have studied autistic language and stated that the autistic child may lack the rule for correct pronoun assignments and may "echo" what is heard. The better performance of the autistic subjects on the comprehension of singular and plural nouns, as well as the poorer performance on personal pronouns and adjectives could possibly be explained by the proficient use of concrete versus abstract language.

Implications

Language skills of autistic adolescents need further

investigation. It is suggested that this study could be replicated with a group of mentally retarded subjects and compare their language performance with the language performance of an autistic group. This would provide language information relative to two groups who often display communication problems, with a comparison on the types of errors.

Other language assessment tools may provide valuable information regarding the language of autistic adolescents. The MPLI which was used in the present study does not encourage spontaneous language which would be much more useful in analyzing the expressive and comprehensive language skills of these individuals. This instrument seems not to be sensitive enough to the peculiar and unique language demonstrated by the autistic subjects before and after testing. This investigator, therefore, suggests that further language research with autistic adolescents should be continued using a language instrument which is more sensitive than the MPLI.

Further information could also be gathered on the comprehension skills (receptive language) of "severe" autistic adolescents (e.g. mute), which may give insight into the more verbal autistic individuals.

Finally, it is felt that a sentence analysis of spontaneous speech could help advance the understanding of autistic language and behavior. The continuing assessment of autistic language is necessary to expand the knowledge needed to comprehend the 'autistic' individual.

SELECTED BIBLIOGRAPHY

- Bandura, Albert. Principles of Behavior Modification. New York: Holt, Rinehart, Winston, Inc. (1969).
- Barrett, Curtis, et al. Abnormal Psychology, Current Perspectives. Del Mar, Calif.: CMR Books (1972).
- Bartak, Lawrence and Rutter, Michael. The uses of personal pronouns by autistic children. J. Autism Childhood Schizophrenia, 4, 217-222 (1974).
- Bartolucci, G. and Albers, R.J. Deictic categories in the language of autistic children. J. Autism Childhood Schizophrenia, 3, 131-141 (1974).
- Berry, Mildred Freburg. Language Disorders of Children: The Bases and Diagnosis. New York: Appleton-Century-Crofts (1969).
- Bettleheim, B. The Empty Fortress. New York: Free Press (1967).
- Bosch, Gerhard. Infantile Autism: Taking Language as a Guide. Berlin: Springer-Verlag (English Edition) (1970).
- Churchill, Don. The relation of infantile autism and early childhood schizophrenia to developmental language of childhood. J. Autism Childhood Schizophrenia, 1, 182-197 (1972).
- Colby, Kenneth M. The rationale for computer-based treatment of language difficulties in nonspeaking autistic children. J. Autism Childhood Schizophrenia, 3, 254-260 (1974).
- Creak, E.M. Childhood psychosis: a review of 100 cases. British J. of Psychiatry, 109, 84-89 (1963).
- Cunningham, M. and Dixon, C. A study of the language of an autistic child. J. Child Psychology and Psychiatry, 2, 193-202 (1961).
- DeMyer, M., Barton, S., Demyer, W.E., Norton, J.A., Allen, J. and Steele, R. Prognosis in autism: a follow-up study. J. Autism Childhood Schizophrenia, 3, 199-246 (1973).

- DeMyer, M., Barton, S., Alpern, B., Kimberlin, C., Allen, J., Yang, E. and Steele, R. The measured intelligence of autistic children. J. Autism Childhood Schizophrenia, 4, 42-60 (1974).
- Dunn, L. Peabody Picture Vocabulary Test. Circle Pines, Minn.: American Guidance Service, Inc. (1959).
- Fay, W.H. On the basis of autistic echolalia. J. Commun. Dis., 2, 38-47 (1969).
- Fay, W.H. On normal and autistic pronouns. J. Speech Hearing Dis., 36, 242-249 (1971).
- Fay, W.H. The challenge of personal pronouns. J. Learning Disability, 5, 299-305 (1972).
- Fay, W.H. On the echolalia of the blind and the autistic child. J. Speech Hearing Dis., 38, 478-489 (1973).
- Ferster, C. Positive reinforcement and behavioral deficits of young children. Child Development, 32, 437-456 (1961).
- Ferster, C., DeMyer, M. A method for the experimental analysis of the behavior of autistic children. Amer. J. of Orthopsychiatry, 32, 89-98 (1962).
- Fox, R.M., and Azrin, N.H. The elimination of autistic self stimulatory behavior. J. Applied Behavior Analysis, 6, 1-14 (1973).
- Hamblin, R., et al. The Humanization Process: A Social Behavioral Analysis of Children's Problems. New York: Wiley-Interscience (1971).
- Hartung, Jurgen. A review of procedures to increase verbal imitation skills and functional speech in autistic children. J. Speech Hearing Dis., 3, 203-217 (1970).
- Hermelin, B. and O'Connor, N. Remembering of words by psychotic and subnormal children. Brit. J. Psychology, 58, 213-218 (1967).
- Hermelin, B. and O'Connor, N. Psychological Experiments with Autistic Children. Elmsford, New York: Permagon Press Ltd. (1970).
- Hewett, Frank. Teaching speech to an autistic child through operant conditioning. Amer. J. Orthopsychiatry, 35, 937-938 (1965).

- Infantile Autism, Proceedings of the Indiana University Colloquium. G. Alpern, D. Churchill and M. DeMyer (Eds.). Springfield, Ill.: Charles C. Thomas, Pub. (1971).
- Kanner, L. Autistic disturbances of affective contact. Nerv. Child, 2, 217-250 (1943).
- Kanner, L. Irrelevant and metaphorical language in early infantile autism. Amer. J. of Psychiatry, 103, 242-245 (1946).
- Kanner, L. The conception of whole and parts in early infantile autism. Amer. J. of Orthopsychiatry, 108, 23-26 (1951).
- Kanner, L. and Eisenberg, L. Notes on the follow-up studies of autistic children. In P.H. Hoch and J. Zubin (Eds.) Psychopathology of Children. New York: Grune and Stratton (1955).
- Kanner, L. Follow-up study of eleven autistic children originally reported in 1943. J. Autistic and Childhood Schizophrenia, 1, 119-145 (1971).
- Kanner, L. Childhood Psychosis: Initial Studies and New Insights. V.H. Winston & Sons, Inc. (1973).
- Lerea, Louis. Assessing language development. J. Speech Hearing Res., 1 (1958).
- Lotter, Victor. Epidemiology of autistic conditions in young children. J. Social Psychiatry, 124-137 (1966).
- Lotter, Victor. Social adjustment and placement of autistic children in Middlesex: a follow-up study. J. Autism and Childhood Schizophrenia, 4, 11-32 (1974).
- Lovaas, O.I., Schaeffer, B. and Simmons, J.Q. Building social behavior in autistic children by use of electric shock. J. Experimental Res. Personality, 1, 99-109 (1965).
- Lovaas, O.I., Literownik, Mann. Response latencies to auditory stimuli in autistic children engaged in self-stimulatory behavior. Behav. Res. Therapy, 9, 30-40 (1971).
- Lovaas, O.I., et al. Some generalization and follow-up measures on autistic children in behavior therapy. J. Applied Behav. Therapy, 131-166 (1973).

- O'Gorman, G. The Nature of Childhood Autism. New York: Appleton-Century-Crofts (1967).
- Pronovost, W. The speech behavior and language comprehension of autistic children. J. Chronic Diseases, 13, 228-233 (1961).
- Pronovost, W., Wakstein, M.D. and Wakstein, D.J. A longitudinal study of the speech behavior and language comprehension of fourteen children diagnosed atypical or autistic. Except. Child, 33, 1926 (1966).
- Rimland, B. Infantile Autism. New York: Appleton-Century-Crofts (1964).
- Rutter, M. Behavior and cognitive characteristic of a series of psychotic children. In J.K. Wing (Ed.), Childhood Autism Clinical, Educational and Social Aspects. New York: Pergamon Press (1966a).
- Rutter, M. Prognosis: psychotic children in adolescence and early adult life. In J.K. Wing (Ed.), Childhood Autism Clinical, Educational and Social Aspects. New York: Pergamon Press (1966b).
- Rutter, M. Concepts of autism: a review of literature. J. Child Psychology and Psychiatry, 1-25 (1968).
- Schell, Robert, Stark, Joel and Giddan, Jane. Development of language in autistic children. J. Speech Hearing Disorders, 32, 51-64 (1967).
- University of Michigan. The Michigan Picture Language Inventory. Ann Arbor: University of Michigan (1962).
- Vetter, Harold. Language Behavior and Psychopathology. Rand McNally and Co. (1969).
- Wing, J.K. Early Childhood Autism. New York: Permagon Press Ltd. (1966).
- Wing, Lorna. Autistic Children: A Guide for Parents. Great Britain: Redwood Press Ltd. (1971).
- Wolski, W. Language development of normal children four, five and six years of age as measured by the Michigan Picture Language Inventory. U. of Michigan, Ann Arbor, Michigan, Doctoral Dissertation (1962).

APPENDIX A

CHRONOLOGICAL AND MENTAL AGES OF THE AUTISTIC AND NORMAL SUBJECTS

Autistic Subjects	C.A.	M.A.	Normal Subjects	C.A.	M.A.
1	18-9	18+	1	17-6	18+
2	14-5	6-8	2	6-1	6-10
3	14-10	8-9	3	8-5	8-7
4	13-3	8-4	4	8-1	8-2
5	12-9	4-6	5	4-8	4-7
6	13-8	6-8	6	6-5	6-10
7	16-8	12-8	7	8-3	12-8

APPENDIX B

SAMPLE RECORDING FORM AND STIMULUS PICTURES FOR THE VERBS AND AUXILIARIES SUBTEST OF THE MPLI

CARD	EXPRESSION	COMPREHENSION	FOIL
43	ARE PAINTING (PAINT)	WILL PAINT	(WERE PAINT- ING)
44	WILL DIG (WILL BE DIGGING) (ARE GOING TO DIG)	ARE DIGGING	(WERE DIG- GING)
45	CUT (WAS CUTTING) (HAS CUT) (HAD CUT) (DID CUT)	IS CUTTING	(WILL CUT)
46	COMBS (IS COMBING)	COMBED	(WILL COMB)
47	WASHED (WAS WASHING) (HAS WASHED) (HAD WASHED) (DID WASH)	WILL BE WASHING	(WASHES)
48	WILL BE WRITING (WILL WRITE) (IS GOING TO WRITE)	WROTE	(WRITES)
49	DREW (WAS DRAWING) (HAS DRAWN) (HAD DRAWN) (DID DRAW)	DRAWS	(WILL BE DRAWING)
50	LIGHTS (IS LIGHTING)	LIT	(WILL BE LIGHTING)
TOTAL

APPENDIX C

RAW SCORES OBTAINED BY THE AUTISTIC AND
MATCHED NORMAL SUBJECTS ON THE MPLI

Subtests:																					
Expression																					
(No. items per subtest)		(A1 N1)(A2 N2)(A3 N3)(A4 N4)(A5 N5)(A6 N6)(A7 N7)																			
Singular & Plural Nouns		19	20	16	12	19	17	17	17	17	15	7	12	11	8	20	20				
(20)		6	7	5	6	7	7	7	7	6	1	3	2	7	7	7	7				
Personal Pronouns(7)		4	4	4	3	4	3	3	3	3	3	1	2	1	3	3	4				
Possessives(4)		12	12	9	12	10	12	11	12	11	12	1	10	10	12	11	12				
Adjectives(12)		3	4	3	2	2	3	3	3	3	3	3	0	2	2	4	4				
Demonstratives(4)		4	4	2	2	4	4	4	4	2	4	2	3	1	1	4	4				
Articles(4)		4	4	3	3	4	3	4	3	4	3	0	4	3	3	2	4				
Adverbs(4)		6	6	5	6	5	5	5	5	5	5	0	5	4	6	6	6				
Prepositions(6)		8	8	3	5	7	5	7	5	7	5	0	2	2	5	8	8				
Verbs & Auxiliaries(8)																					

Subtests:																					
Comprehension																					
(No. items per subtest)		(A1 N1)(A2 N2)(A3 N3)(A4 N4)(A5 N5)(A6 N6)(A7 N7)																			
Singular & Plural Nouns		20	20	20	14	20	20	20	20	20	16	15	10	18	14	20	20				
(20)		7	7	6	7	7	7	7	7	7	7	4	7	5	7	7	7				
Personal Pronouns(7)		4	4	4	4	4	4	4	4	4	4	4	4	3	4	4	4				
Possessives(4)		12	12	12	11	12	12	12	12	12	12	5	12	12	12	12	12				
Adjectives(12)		4	4	4	4	4	4	4	4	4	3	2	1	2	1	4	4				
Demonstratives(4)		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4				
Articles(4)		4	4	3	4	4	4	4	4	4	4	2	4	4	4	4	4				
Adverbs(4)		6	6	5	6	6	6	6	6	6	5	6	4	6	6	6	6				
Prepositions(6)		8	8	7	7	5	7	5	7	8	8	0	5	4	8	8	8				
Verbs & Auxiliaries(8)																					

A=Autistic
N=Normal
(A0N0) = Matched Pairs