

1-1-1974

Effect of the Miller and Yoder syntax teaching program on the language development of educable mentally retarded children

Ellen Bernadette Dean

Follow this and additional works at: <https://digitalcommons.stritch.edu/etd>

 Part of the [Special Education and Teaching Commons](#)

Recommended Citation

Dean, Ellen Bernadette, "Effect of the Miller and Yoder syntax teaching program on the language development of educable mentally retarded children" (1974). *Master's Theses, Capstones, and Projects*. 998.
<https://digitalcommons.stritch.edu/etd/998>

This Research Paper is brought to you for free and open access by Stritch Shares. It has been accepted for inclusion in Master's Theses, Capstones, and Projects by an authorized administrator of Stritch Shares. For more information, please contact smbagley@stritch.edu.

THE EFFECT OF THE MILLER AND YODER
SYNTAX TEACHING PROGRAM
ON
THE LANGUAGE DEVELOPMENT
OF
EDUCABLE MENTALLY RETARDED CHILDREN

CARDINAL STRITCH COLLEGE
LIBRARY
Milwaukee, Wisconsin

by
Sister Ellen Bernadette Dean, S.C.

A RESEARCH PAPER
SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS IN EDUCATION
(SPECIAL EDUCATION)
AT THE CARDINAL STRITCH COLLEGE
Milwaukee, Wisconsin

1974

This research paper has been
approved for the Graduate Committee
of The Cardinal Stritch College by

A. M. Shields, OSE, Ph.D.
(Adviser)

Date: May 10, 1974

ACKNOWLEDGMENTS

The writer expresses her gratitude to the Sisters, Staff and Students of Saint Coletta School, whose advice, availability, cooperation, and encouragement made the undertaking of the research project an educational and enjoyable experience.

Especially appreciated are the contributions made by Mrs. Kathy Colwell, speech therapist at Saint Coletta School, who assisted in the presentation of the lessons and in obtaining the speech samples from the children, and by Mrs. Mary Schoesner whose Basic Training I class participated in the study.

Also gratefully recognized are the support and guidance given by Sister M. Sheila, O.S.F. throughout the experiment and the writing of the paper.

The conducting of this study was possible because the opportunity of pursuing graduate studies was given to the writer by the Congregation of the Sisters of Charity of Saint Vincent de Paul, Halifax, Nova Scotia. It is with deepest gratitude that their generosity is acknowledged.

TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS	iii
Chapter	
I. THE PROBLEM	1
Introduction	
Statement of the Problem	
Justification of the Study	
Population	
Limitations	
Definition of Terms	
Summary	
II. REVIEW OF LITERATURE	12
Importance of Literature	
Difficulties Encountered in Review of Literature	
Research in the Speech Defects of the Retarded	
Research in the Language of the Mentally Retarded	
Possibility of Modification	
Experimental Language Programs	
Summary	
III. PROCEDURE	34
Introduction	
Population	
Implementation of Program	
IV. INTERPRETATION OF FINDINGS	38
Introduction	
Summary	
V. SUMMARY AND RECOMMENDATIONS	42
Summary of Paper	
Limitations of Study	
Recommendations	
Educational Implications	

CHAPTER 1

THE PROBLEM

Introduction

Language is like an iceberg. One part, the production of speech is the vocal tract, the accompanying gestures, the passage of the sound through the air and its impact on the air, is open to immediate observation. But the vastly greater part, the formation of the utterance in the brain of the speaker, its reception by the hearer, and the association of the signal with experience - past and present, individually isolated and socially shared -¹ is below the surface and can be fathomed only by surroundings.

The study of language, then, is a complex undertaking requiring a multidisciplinary approach. In recent years increased knowledge in the fields of cognitive and developmental psychology, genetics, molecular biology, speech science and audiology have enabled linguists to formulate relevant questions concerning the area "below the surface", to develop new theories to account for language acquisition and to implement developmental language programs.

Before designing their Syntax Teaching Program, Jon F. Miller and David E. Yoder, differentiating between the acquisition of language and the acquisition of words, considered the kinds of skills necessary to develop communication behavior, methods to assess these various skills and compensation for areas in which there were deficiencies. Such considerations led them to seek answers to questions pertaining to the appropriate content in language training, the order of the sequence

¹John Lotz, "Linguistics: Symbols Make Man," in Psycholinguistics - A Book of Readings, ed, by Sal Saporte (New York: Holt, Rinehart and Winstein, 1961), p. 1.

of the content, the strategy which should be employed in implementing the various stages, and the developmental level of the child concerned. The rationale for their program was based on Bloom's study of syntactic development in children.

The goal of Bloom's (1970) research was "to investigate the development of linguistic behavior in relation to the underlying conceptual meaning of language for the child, with specific focus on the relation between children's speech and aspects of their experience related to the speech they use."¹

The results of Bloom's study indicated the presence of four contextual variables coinciding with utterance in the subjects studied. These were:

1. Existence of the referent within the context;
2. Recurrence of the referent or addition to the referent after previous existence;
3. Action upon the referent;
4. Nonexistence of the referent in the context where its existence was somehow expected."²

Bloom maintained that for an account of language acquisition to be adequate, three components must be considered - linguistic experience, non-linguistic experience and cognitive-perceptual organization. Cognitive-perceptual organization cannot be programmed; however, ". . . through the manipulation of his linguistic and nonlinguistic experience, the child will be helped to discover objects which referential terms can denote and relationships which can be expressed by inherently relational terms or through conjoining words (syntax)."³

¹Jon F. Miller and David E. Yoder, "A Syntax Teaching Program," in Language Intervention with the Retarded, ed. by J. E. McLean, D. E. Yoder, and R. L. Schiefelbusch (Baltimore: University Park Press), p. 192.

²Ibid., 196.

³Ibid., 198.

Cognizant of the developmental data presented in Bloom's study, Miller and Yoder undertook to design a communication system for the child who was "not developing the language code of the mainstream of the linguistic community at a rate commensurate with his age."¹ However, in setting up the stages in their program, Miller and Yoder based their divisions on the developmental stages necessary for the acquisition of language by those children regarded as normal. These stages they designated as ". . . a) single words, b) word strings, (topic-comment), c) syntactic constructions, and d) three-word sentences."² A basic tenet of their philosophy of language acquisition is that "Before the child becomes a language user, he needs to have something to say (concepts) and a reason for saying it (semantic intent) as well as a way to say it (linguistic structure)."³

In order to develop comprehension and production, the following techniques are used in the program: reinforcement for desired responses, imitation of stimulus words, expansion of words uttered by children and modeling of responses given by the children.⁴

By having the children imitate the use of stimulus words, the teacher can control speech and language responses and bring about increased frequency of desired verbal responses.

When the child expresses a response, the teacher, using telegraphic speech, repeats the words in the order given by the child but employs functions which will result in a well-formed sentence. According to Brown

¹Ibid., 199.

²Ibid., 210.

³Ibid.

⁴Ibid.

and Bellugi (1964) 50% of the attempted imitations of expansions made by children result in additional words being used.¹

After the child has imitated and added to the expansions, the teacher uses sentences which may or may not contain the content words of the child's verbal response. When the child is able to comprehend more complex language units, functions and inflections are added to sentences.

As a guide for the teacher, Yoder and Miller recommend that one modeling sentence be given for every five expansion utterances. Although modeling does not require reinforcement, a child may receive a reward for emitting a spontaneous response.

The Stages in the Syntax Teaching Program

In accordance with Bloom's (1968) theory, Yoder and Miller set sequential target behaviors for each stage of the program and the emphasis throughout the system is on "getting the child to produce verbally those words and utterances which he has demonstrated that he comprehends."² Reinforcement is used not only for the use of particular words but also for the use of word class since comprehension followed by production is the basic principle underlying the language program.

Stage 1 - Single Word Utterance

During the first stage, consideration is given to the choosing of basic functional and referent words which will meet the child's communication needs.

When the child has demonstrated his comprehension of a referent word, he will be asked to imitate the referent word given as a stimulus.

¹Ibid., 202.

²Ibid., 203.

The imitation is followed by a close procedure in which he is asked to complete a sentence with the appropriate noun, then with the article preceding the noun. Following this, the child is asked to respond with the entire sentence to the question: "What this?"¹

In addition to single-referent substantive words, relational terms (verbs and prepositions) are presented. Single-word verbs which end in "ing", able to be acted out are presented to the children, imitated by them and expanded by the teacher.

During this stage each correct response is reinforced. With some referents and some relational terms in his vocabulary, the child is ready to string words together and thus enter Stage II.

Stage II - Word Strings (Topic-Comment)

In this stage the child is encouraged to string together referents and relational terms so that he may communicate his needs. Having been presented with a one-word stimulus or a picture, referred to by Bloom as the "topic", the child strings other words or chooses other pictures related to the word or picture stimulus. The teacher forms word strings from vocabulary words comprehended by the child and asks the child to imitate a model string concerning a stimulus. This stage is not a difficult one, for children engage spontaneously in word stringing. They are rewarded both for spontaneous and elicited word stringing, as the aim of the program is to reinforce classes of behavior as well as specific behaviors.

Stage III - Syntactic Construction

As the child progresses to the next stage the teacher employs

¹Ibid., 204

²Ibid., 207.

referents from the child's present environment and manipulates the environment in order to elicit imitation, expansion, imitation of expansion and modeling in the use of such syntactic constructions as verb/object, subject/object and subject/verb. In addition to manipulating the environment, the teacher may use questions designed to get the child to respond with syntactic construction. Familiar substantive and relational terms are used first followed by new terms added one at a time. In this manner modification, quantification, possession and position concepts are taught.

In Stage III the child has an opportunity to use his known action words in new ways to complete phrases and respond to questions. Depending on the child's ability, the length of time he requires to learn and his spontaneous utterances, some articles, inflections and the verb form "is" are introduced. Also present at this stage are agent-action constructions. Hopefully by the end of Stage III, the child is using three-word constructions.

Stage IV - Three-Word Sentences

After using various phrase constructions in the preceding stages and after listening to the expansions and models presented by the teacher, the child is guided, in the fourth stage to combine and complete phrase structures. Structured sessions may be required to expose the child to the use of subject/verb/object. Miller and Yoder believe "that for most retarded children who have limited ability to process language, operating at the noun-phrase/verb-phrase level may be sufficient and realistic."¹

Aware of the "knowledge explosion" in a number of the disciplines, which provide the linguists with the data necessary to enable them to understand more clearly the acquisition of language, and mindful that some

¹Ibid., 210.

children may be capable of further syntactical development, Miller and Yoder designed their program in such as to allow for the incorporation of new principles of learning and for the addition of more advanced stages to further the development of language acquisition.

Statement of the Problem

This study was undertaken to consider the effects of the Miller and Yoder Syntax Teaching Program on the language abilities of educable retarded children. Employing as experiential and teaching environments the situations in which the children most often express their thoughts, the program provides for manipulation of the children's linguistic and non-linguistic experiences through operant-conditioning procedures, imitation of single stimulus words, expansion of responses, imitation of the expansion and modeling of the responses. The objective of the program is to have retarded children demonstrate relevant communication behavior in accordance with their maturation processes.

The specific purpose of this investigation was to determine whether by participating in this program, seven educable retarded children would be able to learn basic semantic relations which would result in increasing the mean utterance length of their expressive language.

Justification of the Study

Unless a human being can communicate with other people, he cannot grow as a person. Educators who are interested in helping the mentally retarded to become self-sufficient persons realize the significance of developing verbal communication skills. Therefore, any program which purports to facilitate the acquisition of language is deserving of critical analysis and open evaluation.

Language programs developed in the past were based on limited knowledge of psychology, biology, audiology and other sciences related to speech and language. Recent research has produced a "knowledge explosion" in these fields, enabling linguists to devise newer programs. It behooves educators of children who are slow in language development to take advantage of these newer programs which might prove beneficial for language development in the mentally retarded.

The writer of this paper regards the Syntax Teaching Program of Miller and Yoder as one, based on the latest research findings in various scientific disciplines, characterized by carefully planned progressive stages, and having realistic objectives for each stage. It is presented not as a definitive answer to all problems of language acquisition but as a behavioral system of intervention which demonstrates cognizance of language topographies and allows for further developments as increased knowledge of language acquisition and teaching techniques becomes available.

For these reasons, a research project involving the Syntax Teaching Program was deemed a valuable experience for the writer and hopefully for the children who participated in the experiment and for all other persons who might benefit by the data and conclusions of such an undertaking.

Population

The subjects for the study were seven educable retarded children whose CA ranged from 4-3 to 10-3, enrolled in the Basic Training I Program at Saint Coletta School in Jefferson, Wisconsin. When samples of the children's expressive language were observed, they demonstrated the following mean utterance lengths in morphemes for 50 utterances: 2.75, 1.51, 1.52, 1.08, 1.21 and 1.05. For one of the children only 34 utterances

could be reached in the testing session. The mean utterance length for these utterances was 1.9 morphemes.

Limitations

In evaluation the data resulting from this experiment the following must be regarded as limiting factors:

1. The subjects involved in the Syntax Teaching Program were seven educable retarded children. Such a small group is not representative of the educable retarded population as a whole.
2. No control group was used for comparison with the subjects in the Miller and Yoder Program.
3. The study was completed in nine weeks, too short a period of time from which to draw definitive conclusions.

Definition of Terms

The following definitions will serve to delineate distinctions among the terms used by Miller and Yoder, and thus to elucidate the theory underlying the Syntax Teaching Program.

Language

A language is a structured system of arbitrary vocal sounds and sequences of sounds which is used, in inter-personal communication by an aggregation of human beings, and which rather exhaustively catalogs the things₁, events, and processes in the human environment. (Carroll, 1953, p. 10)¹

Speech

Speech refers to the actual behavior of individuals in using language, the amount of talking₂, the conditions under which talking is elicited, and so forth.²

Syntax

Syntax is the term used to denote ". . . the specification of the patterns in which linguistic forms may be arranged and of the ways in

¹John B. Carroll, "Psycholinguistics in the Study of Mental Retardation," in Language and Mental Retardation, ed. by Richard L. Schiefelbusch, Ross H. Copeland and James O. Smith (New York: Holt, Rinehart and Winston, Inc., 1967), p. 43.

²Ibid., p. 43.

which these patterns may be modified or transformed in varying contexts."¹

Semantics

Semantics is the "specification of the meanings of linguistic forms and syntactical patterns in relation to objects, events, processes, attributes, and relationships in human experience."²

Educable Retarded

Mental Retardation refers to subaverage general, intellectual functioning which originates during the developmental period and is associated with impairment resulting in a generally measurable level which is one-half to three-fourths that of normality in one or more of the following: (1) maturation, (2) learning and (3) social adjustment.³

Developmental Approach

Using this approach, "A child's performance is examined on a hierarchy of tasks in which each succeeding item is developmentally dependent on the skills required for the preceding tasks. . . . In the developmental approach, the level at which a child performs in relation to others is of less concern than how his performance on a specific task compares to that on succeeding, more complicated communication tasks. Differences within a child are considered rather than differences among children."⁴

Operant Conditioning

Operant conditioning is that procedure which ". . . brings behavior under the control of reinforcing stimuli. The behavior is evoked by the antecedent stimulus because it has been reinforced by subsequent stimuli in the presence of that antecedent stimulus."⁵

Summary

The purpose of this study was to investigate the effects of the Miller and Yoder Syntax Teaching Program on the language development of seven educable retarded children enrolled in the Basic Training Program at Saint Coletta School in Jefferson.

¹ Ibid.

² Ibid.,

³ John Cawley and A. J. Pappanikou, "The Educable Mentally Retarded", in Methods in Special Education, ed. by Norris G. Haring and Richard L. Schiefelbusch (New York: McGraw-Hill Book Company, 1967), p. 77-78.

⁴ Elizabeth Carrow, "Assessment of Speech and Language in Children," in Language Intervention with the Retarded, ed. by J. E. McClean, D. E. Yoder, and R. L. Schiefelbusch (Baltimore: University Park Press, 1972), p. 53.

The Miller and Yoder Program, based on a study made by Bloom (1968) of the syntactic construction in children, employs such techniques as operant conditioning, imitation, expansion, imitation of expansion and modeling. Developmental in nature, the program consists of four progressive stages - 1) Single-Word Utterances, 2) Word Strings, 3) Syntactic Constructions, and 4) Three-Word Sentences. To incorporate new principles based on developments in various sciences related to the study of speech and language, and to enable children, who have the capacity, to develop language further, the basic design of the program allows for instructional progression beyond the four stages outlined.

Because of the small population brief period of time for experiment and lack of a control group, judgment on the conclusions of the study must include some reservations.

However, an investigation of a developmental language program such as the Syntax Teaching Program of Miller and Yoder can provide insights into language acquisition and teaching techniques and should encourage the undertaking of further studies.

CHAPTER 2

REVIEW OF LITERATURE

Importance of Literature

Despite increased interest in recent years in the speech and language of the mentally retarded, our information concerning language structure of the mentally retarded is limited. As a result of this paucity of information there has been a lack of programs which would enable teachers to diagnose and remediate specific language deficits and to enhance the language status of the individual, tasks which are necessary for educational preparedness.

With the change of emphasis in research from speech to language acquisition and development, more and better programs of educational intervention in language will be designed as information provided by language researchers becomes available. These programs, by influencing the development of language will affect the development of all mental abilities. For the results of various studies, among them those of Ainsworth (1958), Irwin (1959), and Goertzen (1957), have indicated that there is a relationship between intelligence and language development and that therefore any knowledge related to aspects of language acquisition and development should prove enlightening to the whole area of mental development.¹ Hence, the significance of research in the language of mentally retarded persons and of the dissemination of

¹James O. Smith, "Speech and Language of the Retarded," Mental Retardation - Readings and Resources, ed. by Jerome H. Rothstein (New York: Holt, Rinehart and Winston, Inc., 1971), p. 464.

knowledge gained thereby

Difficulties Encountered in Reviewing Literature

A perusal of recent books and periodicals will reveal an increasing number of articles relating research projects in the speech and language of mentally retarded. However, in endeavoring to interpret and to evaluate these studies, many problems are encountered. In the Introduction to Language and Mental Retardation, edited by Schiefelbusch, Copeland, and Smith, some of these problems are cited.¹ The first difficulty arises from the fact that researchers in various disciplines have undertaken studies and written their conclusions in different journals and periodicals. A comprehensive survey of studies, comprising a list of pertinent articles in this field is not available. Also lacking is general agreement on the definition of quality of language and a set standard of criteria when control groups are used. Another source of confusion is the lack of an explanation of the population which is often referred to as merely "mentally retarded." Thus it is difficult to acquire from these research reports, information adequate to enable educators to set up programs of systematic intervention in the speech and language of the mentally retarded. Notable exceptions to this are the writings of Spradlin (1963) whose use of consistent criteria in discussing language behavior makes his work a valuable asset to the field of research reporting.

Research in the Speech Defects of the Retarded

Numerous studies have been undertaken to investigate difficulties in communication skills of mentally retarded persons. Until recently most of these studies concerned one aspect of language, speech, which

¹Richard L. Schiefelbusch, Ross H. Copeland, and James O Smith, ed. "Introduction", Language and Mental Retardation - Empirical and Conceptual Considerations (New York: Holt, Rinehart and Winston, Inc., 1967), p. 3.

Carroll has defined as ". . . the actual behavior of these individuals in using language, the amount of talking, the conditions under which talking is elicited and so forth."¹

The results of studies conducted by such authorities as Bangs (1961), Donovan (1957), Harrison (1958), Kolstoe (1958), Schiefelbusch (1963), Schneider and Vallon (1954) and Wolfensberger, Mein and O'Connor (1963) indicate that there is a prevalence of articulatory disorders among mentally retarded persons. Apradlin (1963) notes that despite difficulties in interpreting results because of the variety of systems used to classify speech defects and because of a lack of explanations regarding the criteria used, useful conclusions can be drawn from these studies. The most notable of these conclusions are that between 57 and 72 per cent of institutionalized mentally retarded have speech defects, and between 72 and 92 per cent of severely retarded children who attend schools sponsored by parents have speech defects. Only 8.26 per cent of the children in special classes conducted in public schools have speech defects.²

According to Peniwill's (1958) review of literature various surveys were taken with the following results: Bart and Lloyd in the 1920's found that 11% of the mentally retarded children in London, and that 15% of the mentally retarded in Birmingham (Lloyd) had speech deficits. Wallin's survey in 1915 revealed that 26% of the mentally retarded in Saint Louis schools had speech defects, 80% of which were articulatory.

¹John B. Carroll, "Psycholinguistics in the Study of Mental Retardation," in Language and Mental Retardation - Empirical and Conceptual Considerations, ed. by Richard L. Schiefelbusch, Ross H. Copeland, and James O. Smith (New York: Holt, Rinehart, and Winston, Inc., 1967), p. 43.

²D. E. Yoder, and Jon F. Miller, "What We May Know and What We Can Do," in Language Intervention with the Retarded ed. by J. E. McLean, D. E. Yoder, and Richard Schiefelbusch (Baltimore: University of Park Press, 1972, p. 90.

In later years Gens (1950), Bibey (1951) and Schlanger (1957) estimated that between 66% and 79% of the institutionalized retarded had defective speech.¹

Sirkin, Jacob and Lyons investigated speech defects in mentally retarded persons and reported the following findings: Approximately one-third of 2,522 persons investigated had normal speech. One-sixth of the number had no speech. Of the language speaking patients, about sixty percent had defective speech. Speech defects occurred twice as frequently in males as in females. Forty-three percent of the moron and borderline groups, seventy-four percent of the imbecile group, and one hundred percent of the idiot group had defective or no speech.²

Blanchard in "Speech Pattern and Etiology in Mental Retardation"³ describes a study in which a comparison was made of growth patterns in articulation among mentally retarded children classified according to medical diagnosis which had been assigned by Heber in 1961. The population participating in this study included three hundred and fifty mentally retarded patients of Pacific State Hospital who had been at the hospital for lengths of time ranging from two months to eight years. Ages ranged from eight to fifteen years and I.Q.'s from 27 to 68. Thirty-eight detailed categories of causes of retardation were specified.

¹James J. McCarthy, "Linguistic Problems of the Retarded," Mental Retardation Abstracts, 1, 1964, p. 18.

²Jacob Sirkin and William F. Lyons, "A Study of Speech Defects in Mental Deficiency," as quoted by Stanley M. Goertzen, in "Speech and the Mentally Retarded Child," American Journal of Mental Deficiency, 62, 1957, p. 245.

³Irene Blanchard, "Speech Pattern and Etiology in Mental Retardation," American Journal of Mental Deficiency, 68, 1964, p. 613-622.

The children were asked to play a simple game of naming things. Their language ability was noted and misarticulations including omission of speech sounds, substitutions, and variant sound productions were recorded.

Blanchard concluded from her study that one in ten of the mentally retarded children had acceptable adult speech and that five in seven were operating on a four year level of articulatory competence. She stated further that "conditions that contribute to a mentally retarded child's intellectual restriction, influence his pattern of verbal communication."¹ Those whose mental retardation could be attributed to mongolism, mechanical injury at birth or prenatal infection seemed to experience the most severe problems in verbal communication. Those children whose retardation was functional or the result of postnatal cerebral accidents had more normal progress in the sequence of consonant development.

¹Ibid., 616.

Research in the Language of the Mentally Retarded

Carroll has defined language as ". . . above all a system, a code if you will, which underlies the actual manifestation of motor behavior we call speech A language is a structured system of arbitrary vocal sounds and sequences of sounds which is used, or can be used, in interpersonal communication by an aggregation of human beings, and which rather exhaustively catalogs the things, events, and processes in the human environment. (Carroll, 1953, p. 10)."¹

Realizing that the acquisition of language is more than the acquisition of words, researchers in the past few years have concentrated their efforts on the study of the various ways in which words are or are not patterned.

Goertzen, in his article "Speech and the Mentally Retarded Child" relates the conclusions of Wallin who stated firstly that normal children could say simple words at age one year whereas feeble-minded children were two years of age before they could say simple words; and secondly that normal children could say phrases and sentences at 1.7 years of age while the feebleminded were three years of age before they could do this.² Stazulla's studies led him to conclude that normal children babble between five and seven months and the retarded between twelve and

¹John B. Carroll, "Psycholinguistics in the Study of Mental Retardation," in Language and Mental Retardation - Empirical and Conceptual Considerations ed. by Richard Schiefelbusch, Ross H. Copeland and James O. Smith (New York: Holt, Rinehart and Winston, Inc., 1967), p. 43.

²J. E. W. Wallin, Clinical and Abnormal Psychology as quoted by Stanley M. Goertzen, "Speech and the Mentally Retarded Child," American Journal of Mental Deficiency 62, 1957, p. 244.

retarded tended to describe the pictures and thus to use nouns, articles, and quantifiers; whereas, the nonretarded often developed narratives and consequently used verbs, prepositions and conjunctions more frequently. Major findings of this study were summarized as follows: (1) In the choice of words (common versus uncommon) the verbal product of the retarded children was comparable to that of nonretarded children, and (2) The usage of part of speech categories by mentally retarded children was unlike that of nonretarded children or either the same CA or the same MA. In this study individual retarded persons were more extreme in using specific parts of speech categories than the nonretarded, the extremes being lost in group comparison. The results of other studies have indicated differences in group comparisons.¹

One aspect of the previous study which must be noted is that the subjects were all residents of an institution. It is, therefore, difficult to attribute deviations in the usage of parts of speech solely to the retardation of the children.

The importance of environment in the area of speech and language development has been stressed by researchers such as Wood (1957) and McCarthy (1954), the latter emphasizing the importance of the home atmosphere. Schlanger (1954) found verbal responses of twenty-one pairs of noninstitutionalized mentally retarded to be superior at the .01 level of significance to the verbal responses of twenty-one pairs of institutional-

¹Barbara Lozar, Joseph Wepman and Wilbur Hass, "Lexical Usage of Mentally Retarded and Nonretarded Children," American Journal of Mental Deficiency, LXXVI, 5, 1972, p. 534-539.

²James O. Smith, "Speech and Language of the Retarded," in Mental Retardation - Readings and Resources, ed. by Jerome H. Rothstein (New York: Holt, Rinehart and Winston, Inc., 1971), p. 466.

ized.¹ After studying sixty institutionalized mentally retarded children whose CA ranged from 7-15 years and with IQ's ranging from 50-75, Badt found that "the longer a child was institutionalized, the less able he was to think abstractly or manipulate concepts."² There was a -.61 negative correlation between the score on the ability to abstract and the length of time the child had been institutionalized. Siegel, as a result of his 1960 study maintained that retarded children may bring about from adults types of verbal responses which do not help to develop their language performance.³

¹Ibid.

²Ibid.

³Ibid.

Possibility of Modification

Recent findings of research projects in the acquisition and development of language have generated the optimistic belief that the verbal behavior of retarded children can be modified. The various authors who contributed articles to Language and Mental Retardation - Empirical and Conceptual Considerations, ed. by Schiefelbusch, Copeland and Smith are in general agreement "that approach to language training can be developed for the retarded at all ages and at all levels of development."¹ They also point out the importance of early training in the child's acquisition and development of language. Richardson in her article "Language Training for Mentally Retarded Children," stresses the importance of speech and language in the retarded:

The majority of mentally retarded children have the potential for attaining some degree of independence and self-sufficiency on reaching adulthood. The actual level of self-sufficiency obtained depends largely on the nature of the training provided during the earliest formative years. ". . . the core of this training is in language and its antecedent development determinants"²

Sailor, Guess and Baer, in their article "Functional Language for Verbally Deficient Children: An Experimental Program" note that successful application of operant conditioning procedures have been reported by language developmentalists who have worked with brain damaged, autistic and schizophrenic children and stults. They cited the

¹Richard L. Schiefelbusch, Ross H. Copeland, James O. Smith, eds., Language and Mental Retardation, (New York: Holt, Rinehart and Winston, Inc., 1967), p. 15-16.

²Sylvia O. Richardson, "Language Training for Mentally Retarded Children", in Language and Mental Retardation, ed. by Richard L. Schiefelbusch, Ross H. Copeland, James O. Smith (New York: Holt, Rinehart and Winston, Inc., 1967), p. 146-147.

successes of the following experimenters: Risley and Wolf, (1967); and Wheeler and Suzler, (1970), have used operant techniques to correct patterns of speech. Isaacs, Thomas and Goldiamond, (1965); and Sherman, (1963), (1965), used such procedures to help people who had lost their speech to speak again. A number of researchers and educators, among them Lovaas, Bererich, Perloff, and Schaeffer, (1966); Guess, Rutherford, and Twichell, (1969); Bricker and Bricker, (1970); Sailor, (1970) and Buddenhagen, (1971), have used operant conditioning to help nonverbal children to develop language.¹

Miller and Yoder maintain that:

In reviewing the literature related to the communication of retarded children, we find a number of studies which demonstrate that retarded children can and do learn linguistic features when the environment is structured to differentially reinforce appropriate and inappropriate behavior.²

The results of the foregoing studies indicate that researchers are justified in presuming that the mentally retarded are capable of mastering a set of principles which underlie the combination of the words used in the formation of sentences, and of translating their knowledge into linguistic expression.

¹Wayne Sailor, Doug Guess, and Donald M. Baer, "Functional Language for Verbally Deficient Children - An Experimental Program," Mental Retardation, XI, No. 3, June, 1973, p. 27.

²J. F. Miller and David E. Yoder, "An Ontogenetic Language Strategy for Retarded Children," (Paper presented for NICHD Conference on Language Intervention with the Mentally Retarded. Chula Vista, Wisconsin Dells, Wisconsin, June, 1973.) p. 1.

Experimental Language Program

As more information concerning phonology, morphology, syntax and semantics makes possible a clearer understanding of the underlying structure of language, more effective programs for the acquisition and modification of language in the mentally deficient are being designed.

Smith (1962 b) described an experimental language program comprised of thirty-three lessons and designed to develop nine language abilities tested by the Illinois Test of Psycholinguistic Abilities. On the posttest the sixteen experimental subjects surpassed the control group. It must be noted, however, that when Mueller and Smith (1964) did a follow-up study on the population two years later they found a difference favoring the experimental subjects but the difference was no longer significant.¹

Dunn and Smith (1964) later produced a further development of Smith's previous work in the Peabody Language Development Kit. The two hundred plans in the Kit were designed to provide everlearning and consequently greater retention than could be attained by the previous thirty-three lessons.²

Schiefelbusch (1963) has reported the results of research projects concerning the verbal behavior of retardates working with other retardates (Siegel and Harkins, 1963) and working with adults (Siegel, 1963). Such studies indicate that adults respond to retardates who are linguistically

¹James J. McCarthy and Richard C. Schurenberger, "A Decade of Research on the Education of the Mentally Retarded," in Mental Retardation - Readings and Resources by Jerome H. Rothstein (New York: Holt, Rinehart and Winston, Inc. 1961), p. 564.

²Ibid.

more advanced by using more complicated sentences and higher type-token ratios. Hence, the verbal behavior of a child can often exercise control over verbal behavior of adults.¹ Horowitz (1963) conducted a study to determine the most effective reinforcer among such rewards as candy, vocal, smiling, vocal-smiling, and candy-vocal, and found that the last mentioned stimulated responses most effectively.²

"To summarize, there appears to be ample justification to regard language development and remediation as an integral part of the academic curriculum for retardation, since tool subjects and content studies assume minimal linguistic adequacy."³

In his article "Group Language Development for Educable Mental Retardates," Smith describes a study undertaken to determine whether three months of experimental treatment would result in a significant increase in the language age of educable mentally retarded children. Also investigated were the relationships of initial language age and I.Q. to language age gain. The subjects chosen for the study were 16 pairs of educable retarded children (CA 7-10; IQ 50-80) from special class programs in Davidson County and Nashville, Tennessee. The groups were matched for CA and overall language age, were chosen from lower socio-economic area and were free from physical defects such as impaired vision and/or hearing.

¹Ibid., 565.

²Ibid., 565.

³Ibid., 566.

⁴James O. Smith, "Group Language Development for Educable Mental Retardates," in New Directions in Special Education ed. by Reginald L. Jones, (Boston: Allyn and Bacon Inc., 1970), p. 155.

The instrument used for the study was the Illinois Test of Psycholinguistic Abilities. This test consists of nine subtests designed to measure linguistic abilities in "three processes of communication (decoding, association, encoding), the levels of organization (representational and automatic sequential), and by channel of input and output (auditory and visual input, vocal and motor output)."¹ The results of this test give a profile depicting areas of ability and disability together with an overall language age. The Illinois Test of Psycholinguistic Abilities was given before the program was administered and again at the end of the experimental sessions. The mean difference in total LA gain between the two groups was used as an indication of the program's effectiveness.²

For a three month period, the subjects, divided into two separate groups of eight each, were instructed in three forty-five minute periods per week. Stimulating and enriching lessons in which children participated, were presented. The lessons included a variety of activities, the objective of which was to develop the abilities to decode, to associate and to encode. Participation and successes, both individual and group, were reinforced, with praise from the instructor.³

The results of the posttests given to both groups indicated that there was a significant mean difference between the language age gain made by the experimental group and that made by the control group. Those in the experimental group showed a mean language age which was slightly more than

¹Ibid. 155.

²Ibid., 156.

³Ibid., 157.

seven months over that for the control group. Of the sixteen experimental children, thirteen made greater gains than their matched partners in the control group.¹

Conclusions drawn by Smith from this study were as follows: It

1. Presented evidence which partially answers the urgent need for objective verification of the value of language development programs for the mentally retarded.
2. Identified a practical, short-term program of language development which significantly increased the LA of young EMR children.
3. Adds to the literature a detailed set of lesson plans for language development which might be used in future educational planning or research.
4. Answers the need for researching such programs with the public school special class retardate rather than institutionalized populations.
5. Lends further research evidence concerning the validity and reliability of the ITPA as an instrument for assessing the language abilities of EMR children.²

Sailor, Guess and Baer in an article "Functional Language for Verbally Deficient Children: An Experimental Program", presented their outline of a program of language training based on operant conditioning procedures.³

A major objective of the program is to have mute, nominative subjects produce "functional sentence usage, involving people, things, and their interactions, within its first 29 sequential lesson-steps (each step a program of contingencies aimed at one further advance in language skill)."⁴

¹Ibid., 162.

²Ibid., 162-163.

³Wayne Sailor, Doug Guess, and Donald M. Baer, "Functional Language for Verbally Deficient Children: An Experimental Program," Mental Retardation, June, XI, No. 3, 1973, p. 27-35.

⁴Ibid. 27.

During the assessment and evaluation phase of the program (Part I) - particular behavior deficiencies and problems are observed. Data collected include descriptive information, neurological and audiological functioning, reinforcer selection, vocal and motor imitation test (1), assessment of vocal diversity and frequency, attention training, assessment of receptive language abilities, and vocal and motor imitation (test 2), the last mentioned "to allow for possible warm-up effects".¹

The training of vocal imitation is considered a significant, initial step in any program to remediate language. "All subsequent phases of language training are based on the premise that the child is capable of producing vocal responses which match or approximate a vocal stimulus presented by the trainer."²

The aim of this phase of the program is to have the child engage in vocal imitation, striving always to more closely approximate the vocal stimulus of the instructor. Eventually, the child should be able to imitate words which will be of "functional language value for the child."³ The authors are seeking to determine (1) the most effective technique to enable a nonverbal child to imitate vocal sounds and (2) the relationship between "physical (motor) imitation training" and "generalized vocal imitation." In designing their program, the authors combined "operant orientation" with the results of findings in the linguistic and psycholinguistic fields.⁴

The four dimensions of the procedure for the program include reference, control, self-extended control, and integration functions of language.

¹Ibid., 29 and 30.

²Ibid.

³Ibid.

⁴Ibid.

Reference

The more efficient a child is in responding to words, the more capable he is of controlling his environment. Reference can be considered in two basic forms. The first, productive, refers to "spoken labels" for things and actions in the child's environment. The second, receptive, refers to those stimuli which others speak to the child making it possible for him to respond motorically and verbally. The events chosen in this dimension of the program must be of significance to the child in order to be of value in environmental control.¹

Control

During this dimension of the program, the child is taught to make requests productively, i.e. by stating "I want (thing) or (action with thing), and receptively, i.e. responding to others' questions, e.g. "You want (thing) or (action)?" by answering verbally "yes" or "no".²

Self-Extended Control

In addition to being shown that he can manage his environment by knowing referents, the child must also learn that to extend these referents, he must be able to request instruction when he is ignorant of a specific referent. Thus, he must learn questions such as "What that?" and "What (are) you doing?" Asking questions can enable him to remain in contact with those procedures used earlier in the training program. Through the use of questions the child is able to expand his language capabilities by choosing that which is most functional in his present environment.³

¹Ibid., 30 and 31.

²Ibid., 31.

³Ibid.

Integration

The fourth dimension of the program is aimed at enabling the integration of skills which have been taught in the reference, control and self-extended control sections. Steps are programmed such as to ensure that the child will not only invite instruction but also remember and use the information concerning things and actions. Tests are administered to prove retention of information.¹

Content of the Program

Six areas are emphasized in the problem: Persons and Things, Action with Persons and Things, Possession, Color, Size and Relation. With regard to Persons and Things, the child is taught to label those found in his environment, to respond with "yes" or "no" to questions concerning concepts already taught, to request items unfamiliar to him, and to make requests using simple sentences including the pronoun "I". Steps programmed for the Action with Persons and Things category include the following: productive labeling of simple actions, the discrimination of I and You, the combination of pronouns, verbs, and object labels, the request for the performance of specific verb actions, and the questioning concerning labels of new actions. The last four areas, Possession, Color, Size and Relation provide training, enabling the child to increase his control of the environment by adding to his repertoire of useful language. The steps within all six categories are organized according to the dimensions of reference, control, self-extended control and integration.²

In addition to an explanation of the philosophy underlying the pro-

¹Ibid.

²Ibid., 34.

gram and of the rationale for each phase, the authors present an outline form comprising sixty-one sequential steps. They express their opinion as to the "quasi-developmental" and "quasi-logical" nature of their program, and their hope, that with the knowledge gained through the use of the program, and through related research, further developments will result in a program for the training of language.¹

¹Ibid.

Summary

Presented in this chapter is a review of literature pertaining to research in the speech and language of the mentally retarded. Such literature is significant because educators base their designs for programs on the information provided in research reports.

In reviewing the accounts of experiments, however, difficulties are encountered because of the wide variety of books and journals in which the written reports are published, and because in the majority of cases, the writers fail to provide explanations of terms such as "quality of language", "criteria", and "mentally retarded".

Until recently, most researchers in this field concentrated on projects related to speech which is but one aspect of language. Results of such projects indicated a prevalence of articulatory disorders among the mentally retarded.

Presently, the trend in research is to emphasize the acquisition and development of language which is regarded as a system underlying the manifested speech of the person. Studies relating to this topic have led to the conclusions that mentally retarded children are slower than "normal" children in acquiring and developing language, that mentally retarded children have a tendency to be more concrete in their thinking than do nonretarded children, that mentally retarded children differ from "normal" children in their use of various parts of speech, and that environment does exert an influence on the speech and language of the retarded.

During the past few years, researchers have been encouraged by the results of studies which seem to support the hypothesis that the verbal behavior of retarded children can be modified. Early training and the

application of operant conditioning procedures, and of principles of teaching derived from the new knowledge concerning the linguistic and psycholinguistic aspects of language have enabled mentally retarded persons to acquire and develop the ability to communicate verbally.

As researchers provide information regarding their most recent studies, educators continue to experiment with designs for programs in language development. The final section of the chapter concerns several of these programs, none of which is proposed as a definitive answer, but all of which are presented as developments which should stimulate further research and curriculum planning in this most important area of verbal communication in the mentally retarded.

CHAPTER III

Procedure

Introduction

"To develop communication skills in every mentally retarded child has been a goal and desire of parents, educators and clinicians for many years."¹

To achieve this goal, to fulfill this desire, educators have concentrated their efforts, especially during the past five years on designing programs which would effect the acquisition and development of language in the mentally retarded. Among these educators are Yoder and Miller, part of whose Syntax Teaching Program, as described in Chapter I, was implemented by the writer, to consider its effects on the language abilities of educable retarded children. The specific purpose of employing this program was to determine whether the seven educable mentally retarded children, participating in the experiment, would be able to learn basic semantic relations and consequently increase the mean utterance length (in morphemes) of their expressive language.

Population

The subjects for the study were six educable retarded children whose CA's ranged from 4-3 to 10-3, enrolled in the Basic Training Program at Saint Coletta School in Jefferson, Wisconsin.

¹Jon F. Miller and David E. Yoder, "An Ontogenetic Language Teaching Strategy for Retarded Children," (paper presented for NICHD Conference on Language Intervention with the Mentally Retarded, Chula Vista, Wisconsin Dells, Wisconsin, June, 1973), 1.

Implementation of Program

The first phase of the experiment included the observation and recording of fifty samples of speech utterances expressed by each child during a free play period in the presence of the instructor. From the fifty utterances, the mean utterance length in morphemes was derived. Morphemes are "sets of sound segments which have meaning. Most morphemes correspond to words, but some, called 'bound morphemes', carry meaning without occurring alone. For instance, -ing, -s (plural), and -ed (past tense) signal meaning when attached to words."¹

The following mean utterance lengths in morphemes were demonstrated by the subjects: 2.75, 1.51, 1.52, 1.08, 1.21 and 1.05. For one of the children, only 34 utterances could be attained in the testing session. The mean length for these utterances was 1.90 morphemes.

Based on the developmental stages necessary for the acquisition of language by normal children, the Miller and Yoder program is divided into four stages - single words, word strings, syntactic construction, and three-word sentences. Because the children were considered to be sufficiently advanced in the first two stages, it was decided to initiate the program with the third stage.

For 15 minutes a day, 5 days a week, during a 9 week period, the syntactic construction stage of the program was implemented by the writer with the six subjects chosen for the study. In the beginning those objects and events with which the children had had experience and which they seemed to recognize as particular objects and relationships were chosen as stimuli

¹Robin S. Chapman, "Some Simple Ways of Talking About Normal Language and Communication" in Language Intervention with the Retarded edited by J. E. McLean, D. E. Yoder, and R. L. Schiefelbusch, (Baltimore: University Park Press, 1972), p. 21.

to elicit imitation, expansion and imitation of expansion. The instructor modeled various syntactic constructions such as subject and verb, verb and object, and subject and verb and object. This technique was followed by the posing of questions designed to encourage the child to respond with syntactic constructions.

The manipulation of environment and interrogation by the instructor are demonstrated in the description of the following procedure used in one of the lessons:

- 1) The instructor present a doll "walking" and stated the target sentence, e.g. "Doll walk."
- 2) The instructor then asked each child: "What doll do?", and reinforced the child with M&M's, chocolate chips, chocolate krispies, or fruit loops for responding with "walk" or "Doll walk." and requested the child to listen and to imitate the verbal expression.
- 3) If the child did not respond, the instructor repeated the statement "Doll walk." and requested the child to listen and to imitate the verbal expression.
- 4) When the child imitated the expression correctly, he or she was reinforced with one of the rewards listed above.
- 5) The instructor then expanded the response saying: "That's right, the doll is walking."
- 6) The child was required to imitate the expansion and was reinforced for acceptable imitation.
- 7) The teacher would then model various syntactic constructions, e.g. "The doll is walking to the door." "The doll is walking to Janie." "The doll likes Janie."
- 8) Questions such as "What doll do?" "Is doll walking?" were presented to the child to elicit a response (without imitation) with syntactic construction. Reinforcement procedures followed previous standards.

Other familiar action words such as "sit", "sleep", "jump", and "like" were employed and presented in a manner similar to that used with the presentation of "walk". In addition to having a doll "perform" the action, a picture in which the action was depicted was shown or the children were asked to perform the activity. Verbs such as "roll" and

"play" were introduced by means of a ball and toy manipulated by the instructor and the children.

During the lunch break, for ten consecutive days, each child was shown milk and food e.g. crackers, cookies, candy and cake and asked to request the food and drink using the verb "want".

Following the use of substantives, relational terms such as more, "no", and "no more", were combined with the names of nouns familiar to the children.

Each child was required to verbally respond to the stimuli during the lesson and each response was recorded by a teacher, so that progress could be noted. The mean utterance length of each child was taken into consideration, and reinforcement was given when the instructor felt that a child was putting forth his or her best effort. For example, a one word response was satisfactory for some of the children, in the beginning whereas other children were required to answer in sentences.

At the end of the 9 week period each child had a session of free play in the presence of the instructor. As in the first session, samples of speech utterances were noted and recorded. From these, a mean utterance length was derived for comparison with the previous mean utterance length.

Chapter IV

Interpretation of Data

The present study was conducted to investigate whether by participating in the Miller and Yoder Syntax Teaching Program, a group of educable retarded children would be able to learn basic semantic relations which would result in increasing the mean utterance length of their expressive language.

Initially seven children enrolled in the Basic Training I Program at St. Coletta School were selected for the study. However, because one child was later chosen to participate in a program at a more advanced level and because sufficient speech could not be elicited from another child, it was decided to consider the results of the remaining five children. These children had C.A.'s ranging from 4-3 to 8-5, M.A.'s ranging from 2-5 to 4-1, and I.Q.'s ranging from -30 to 65. Their language development was below the level expected for their chronological ages.

To determine the mean utterance length of each child before the intervention of the program, the writer observed the child while he or she was engaging in a free play period. Fifty samples of speech utterances expressed by the child during this time, were recorded and the mean utterance length was found.

Since the children appeared to comprehend and to be able to express single words and word strings, it was decided to initiate the Miller and Yoder Program in the third stage - that involving syntactic construction.

During the initial free play session the children's uses of such syntactic constructions as verb/object, subject/verb and subject/object were observed and recorded. By working with referents in their present environment and by structuring the environment in appropriate ways, the instructor attempted to encourage the use of these syntactic constructions during the daily 15 minute periods.

After the children had participated in the program for nine weeks the writer again observed the children in another session of free play, recorded fifty samples of speech utterances and found the mean utterance length for each child. Also noted was the frequency with which the children expressed themselves using the aforementioned syntactic constructions.

In the following Tables are presented the statistical data concerning the mean utterance lengths and the uses of syntactic constructions for the five subjects of the study.

Mean Utterance Length

	C.A.	M.A.	I.Q.	Initial	Final
A	7-3	4-1	53	1.08	1.64
B	4-16	3-4	65	1.05	1.54
C	4-3	2-5	55	1.21	1.76
D	8-5	2-6	-30	1.52	1.56
E	8-2	3-3	39	2.75	2.70

	Verb-Object		Subject-Verb		Subject-Object	
	Initial	Final	Initial	Final	Initial	Final
A	0	10	1	9	0	5
B	0	3	0	2	0	1
C	0	11	1	13	0	5
D	5	5	1	1	1	1
E	9	12	8	9	5	6

The tabulated data for Students A, B, and C indicate definite increases in mean utterance length (.56, .49 and .51 respectively) and in the use of all three syntactic constructions - verb/object, subject/verb, and subject/object.

The results of the observations and recordings for Student D reveal a very slight increase in mean utterance length (.04) and no noticeable increase in the use of syntactic constructions in the final testing situation. The fact that Student D was highly distractable and extremely tense during the free play sessions were factors contributing to the difficulty in making an accurate assessment of his mean utterance length and patterns of syntax.

A comparison of the data for the initial and final play sessions for Student E indicates a decrease in mean utterance length and a slight increase in the use of the three syntactic constructions.

In the final play session Students A, C, and E revealed a definite increase in the use of three word sentences.

The data resulting from the initial and final play sessions suggest that four of the five children, after participating in the Yoder and Miller Program for a nine-week period increased their use of syntactic constructions (verb/object, subject/verb, and subject/object) while one remained at the same level and that four of the five children increased the mean utterance lengths of their expressive language while one showed a slight decrease in mean utterance length.

Summary

In this chapter the writer restated the purpose for which the study was undertaken, described the population, and discussed the data tabulated as a result of the observations and recordings of samples of the subjects' speech during two free play sessions, one preceding the intervention of the Miller and Yoder Syntax Teaching Program, the other following participation in the program. A comparison of the two sets of data indicates that four of the five children showed an increase in their mean utterance length while one showed a light decrease, and that four of the five children increased the frequency of their use of such syntactic constructions as verb/object, subject/verb and subject/object while one remained at the same level.

It would appear, then, that four of the five educable retarded children, by participating in this study were able to learn basic semantic relations which would result in increasing the mean utterance length of their expressive language and that one of the educable retarded children although not increasing her mean utterance length was able to use more frequently the verb/object, subject/verb, and subject/object syntactic constructions.

Chapter V

Summary

In order to assume a responsible place in society a person must be able to demonstrate effective communication behavior. Hence the importance of the acquisition and development of language.

A survey of the literature concerning speech and language revealed that numerous studies related to various aspects of speech had been undertaken, but that there was a paucity of information regarding the underlying structure of speech which is language.

Convinced that the acquisition of language requires more than the acquisition of words, Miller and Yoder designed a Syntax Teaching Program in which are employed such techniques as imitation, expansion, imitation of expansion, modeling and operant conditioning. Four stages - 1) single-word utterances, 2) word strings, 3) syntactic constructions and 4) three-word sentences comprise the developmental program with the basic design allowing for instructional progression beyond these stages.

To consider the effects of the Miller and Yoder Syntax Teaching Program on the language abilities of educable mentally retarded children, the writer conducted a study in which five educable mentally retarded children participated for 15 minutes each day for a nine week period. The subjects ranged in chronological age from 4-3 to 8-5, with M.A.'s ranging from 2-5 to 4-1, and I.Q.'s from -30 to 65.

Preceding the intervention of the Yoder and Miller Program each child was observed during a free play session during which the mean

utterance length and the frequency with which the child used such syntactic constructions as verb/object, subject/verb, and subject/object were recorded.

After having participated in the program for nine weeks each child engaged in another play session during which the mean utterance lengths and the frequency of syntactic constructions were again noted and recorded. The following data and observations will serve to illustrate the findings of the study:

Student A - C.A.: 7-3; M.A.: 4-1; I.Q.: 53
 Initial Mean Utterance Length: 1.08
 Final Mean Utterance Length: 1.64

Comparison of the initial mean utterance length and the final mean utterance length indicates that this child is capable of speech and language improvement. However, continual stimulation and reinforcement were necessary for progress. Frequent repetition was required to enable this student to express her needs, first in imitation and later spontaneously.

Student B - C.A.: 4-11; M.A.: 3-4; I.Q.: 65;
 Initial Mean Utterance Length: 1.05
 Final Mean Utterance Length: 1.54

Coming from a home background in which a foreign language is spoken may have contributed to the difficulties experienced by the student in vocal expression. During the lessons and the play sessions the child, although alert and responsive, uttered sounds which were indistinct, perhaps because the words used were those of the foreign language spoken at home.

Student C - C.A.: 4-3; M.A.: 2-5; I.Q.: 55;
 Initial Mean Utterance Length: 1.21
 Final Mean Utterance Length: 1.76

This student appeared to have benefited from early training in

speech and language received at home, and was able, after a number of imitations to employ spontaneously word strings and three word sentences containing various syntactic constructions to express her needs.

Student D - C.A.: 8-5; M.A.: 2-6; I.Q.: -30
 Initial Mean Utterance Length: 1.52
 Final Mean Utterance Length: 1.56

Student D had difficulty concentrating for any length of time during the lessons and play sessions. His hyperactivity and tension during both seemed to hinder his ability to learn from repetition and imitation. To these tendencies might be attributed his lack of significant progress in the program.

Student E - C.A.: 8-2; M.A.: 3-3; I.Q.: 39
 Initial Mean Utterance Length: 2.75
 Final Mean Utterance Length: 2.70

This child tended to be highly distracted during the lessons and the play sessions. However, in less formal situations Student E was able to express herself in complete sentences using four or more words. It would appear that samples of speech taken from structured situations did not reveal the usual speech patterns of this student and that a better representation would have been given had samples been taken from informal situations when the child was not aware that her voice was being taped.

In summary, comparisons of the data for the initial and the final mean utterance length and frequency in the use of syntactic constructions indicated that four of the five children increased their mean utterance lengths while one child showed a slightly decreased mean utterance length, and that four of the five children increased their frequency in using the syntactic constructions such as verb/object, subject/verb, and subject/object while one child remained on the same level.

Limitations of Study

In evaluation the data resulting from this experiment, consideration must be given to several limiting factors.

1. The subjects involved were five educable mentally retarded children. Such a small group cannot be assumed to represent educable mentally retarded people in general.
2. No control group with which to compare the experimental group was used in the study.
3. The study was completed in nine weeks, too short a period of time from which to draw definitive conclusions.
4. During the lessons comprising the program, the writer concentrated on only one section of one stage, that concerning syntactic constructions.

Recommendations

The following recommendations which may prove beneficial for future studies are offered:

1. A similar study might be undertaken, using a larger group of children for a longer period of time.
2. A long-range study involving experimental and control groups might be conducted.
3. A similar study, concentrating on one of the other stages - single-word utterances, word strings, or three-word sentences might be undertaken.
4. A study concentrating on one of the other sections of Stage 3 of the Program such as possession, prepositions or position in space might be conducted.
5. A study involving an experimental curriculum with accompanying lesson plans for a section or a stage of the Program might be pursued.

Educational Implications

The purpose of the study was to consider the effects of the Miller and Yoder Syntax Teaching Program on the language abilities of educable retarded children. Comparison of the data tabulated for the speech samples recorded during the initial and final play sessions indicate

that, in general, four of the five educable retarded children participating in the program were able to learn basic semantic relations which resulted in increasing the mean utterance length of their expressive language. It would seem, then, a worthwhile endeavor for educators who design curriculum to study possible ways to devise lesson plans designed to implement the stages in the program.

Bibliography

Books

- Carroll, John B. "Psycholinguistics in the Study of Mental Retardation." Language and Mental Retardation - Empirical and Conceptual Considerations. Edited by Richard Schiefelbusch, Ross Copeland, and James O. Smith. New York: Holt, Rinehart and Winston, Inc., 1967.
- Haring, Norris G. and Schiefelbusch, Richard L. Methods in Special Education. New York: McGraw-Hill Book Company, 1967.
- Lotz, John. "Linguistics: Symbols Make Man." Psycholinguistics - A Book of Readings. Edited by Sal Saporte. New York: Holt, Rinehart and Winston, 1967.
- McCarthy, James J., and Schurenberger, Richard. "A Decade of Research on the Education of the Mentally Retarded." Mental Retardation-Readings and Resources. Edited by Jerome H. Rothstein. New York: Holt, Rinehart and Winston.
- McLean, J.E., Yoder, D.E., and Schiefelbusch, R.L. ed. Language Intervention with the Retarded - Developing Strategies. Baltimore: University Park Press, 1972.
- Richardson, Sylvia O. "Language Training for Mentally Retarded Children." Language and Mental Retardation - Empirical and Conceptual Considerations. Edited by Richard L. Schiefelbusch, Ross H. Copeland, and James O. Smith. New York: Holt, Rinehart and Winston, Inc., 1967.
- Smith, James O. "Group Language Development for Educable Mental Retardates." New Directions in Special Education. Edited by Reginald L. Jones. Boston: Allyn and Bacon Inc., 1970.
- _____. "Speech and Language of the Retarded." Mental Retardation - Readings and Resources. Edited by Jerome H. Rothstein. New York: Holt, Rinehart and Winston, Inc., 1967.
- Yoder, D.E. and Miller, Jon F. "What We May Know and What We Can Do." Language Intervention with the Retarded. Edited by J. E. McLean, D. E. Yoder and Richard Schiefelbusch. Baltimore: University of Park Press, 1972.

Articles

- Blanchard, Irene. "Speech Pattern and Etiology in Mental Retardation." American Journal of Mental Deficiency, LXVIII (March, 1964), 612-617.
- Goertzen, Stanley M. "Speech and the Mentally Retarded Child." American Journal of Mental Deficiency, LXII (September, 1957), 244-253.
- Lozar, Barbara, Wepman, Joseph, and Hass, Wilbur. "Lexical Usage of Mentally Retarded and Nonretarded Children." American Journal of Mental Deficiency. LXXVI (March, 1972), 534-539.
- McCarthy, James J.. "Linguistic Problems of the Retarded." Mental Retardation Abstracts, I (January - March, 1964), 3-27.
- Sailor, Wayne, Guess, Doug, and Baer, Donald M. "Functional Language for Verbally Deficient Children - An Experimental Program." Mental Retardation, XI, (June, 1973), 27-35.

Paper

- Miller, J. F. and Yoder, David E. "An Ontogenetic Language Strategy for Retarded Children." Paper presented for NICHD Conference on Language Intervention with the Mentally Retarded, Chula Vista, Wisconsin, June, 1973.