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AUTHOR Wasik, Barbara H.; Sibley, Sally A.
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ABSTRACT

Twenty culturally deprived children planning to enter first grade in the fall attended an 8-week half-day summer program in which a systematic classroom management program utilizing token reinforcement and isolation techniques was combined with a strong academic program. One hour and 40 minutes was allotted daily to pre-reading and language programs (Sullivan reading readiness, 20 minutes; phonics, 20 minutes; supplementary language activities, 20 minutes; language-oriented art, music or other supplementary activities, 40 minutes). Two additional programs, stressing cognitive skills were designed to increase proficiency in such areas as verbal fluency, following instructions, manipulative activities, and classification. Cuisenaire rods were used in the arithmetic program, scheduled daily for one-half hour. Three major areas of skills (intelligence, language and pre-reading, and social maturity) were assessed by a battery of pre- and posttests. Significant gains were shown in the areas of language, speech, pre-reading and arithmetic, and in the ability to handle abstract concepts. Children will be assessed again at the end of first grade to find out if gains are being maintained. Results of tests assessing social maturity were inconclusive. (NH)

An Experimental Summer Kindergarten for Culturally Deprived Children

Barbara H. Wasik
Duke University

Sally A. Sibley
George Washington University

Education Improvement Program
Duke University
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Barbara H. Wasik
Duke University

Sally A. Sibley
George Washington University

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Chapter I

Introduction

Over the past decade the need for formal instructional classes for culturally deprived children has been expounded upon by many people across the country. The action of Congress in granting appropriations in 1965 for Project Head Start classes around the country and the investment of time and money on the local level testifies to the awareness of the need to assist children from deprived backgrounds before they begin primary school.

Recent research has shown that as early as four years of age the children from the low income families are from one to three years behind children from middle class environments (Bereiter and Engelmann, 1966; Gray and Klaus, 1965; Klaus and Gray, 1968). Controversy remains high, however, on the nature and timing of the most effective programs to help these children. Several different kinds of programs are currently in operation to help overcome the educational retardation experienced by children from deprived backgrounds. Reidford (1968) has grouped these programs into four categories: traditional nursery school enrichment, modified nursery school enrichment, diagnostic language program, and direct language instruction - academic.

An example of the traditional nursery school enrichment program is that of Gerald Alpern (1966). Alpern had fifteen disadvantaged preschool children in an experimental program in which half of the time was devoted to free play, a quarter of the time was spent in enrichment training, and a quarter of the time was spent in typical preschool outdoor activities. Pre- and posttest scores on the Stanford-Binet and a modified Metropolitan Achievement Test of

the experimental group were compared with a control group. For each test no significant gains were made by either group.

Gray and Klaus' work with disadvantaged children is described by Reidford as a modified nursery enrichment program since special curriculum measures are introduced, but the setting remains that of a typical nursery school. Their general findings in the early report showed that the special curriculum programs did result in significant gains in language skills. Klaus and Gray (1968) have recently published a study of five years' work with disadvantaged preschool children. They instituted programs which would compensate for the lack of early stimulation in the lives of these children and would develop attitudes and aptitudes that were needed for success in school. Using two experimental and two control groups, their results showed, in general, that children in experimental groups were superior to the control groups on almost all measures.

Another type of program, a diagnostic language program as described by Reidford, has been put into effect by the Pennsylvania Department of Public Instruction aided by a grant from the Ford Foundation. These investigators found no difference on the Illinois Test of Psycholinguistic Abilities (ITPA) and on the Peabody Picture Vocabulary Test after a one-year enrichment program for nursery and kindergarten classes. They then decided to use the ITPA as a diagnostic test and to plan a curriculum for a child based upon his profile. The results of their study, as related in their fourth year report, showed that significant IQ gains were made by two of the six experimental groups. When experimental groups were compared with their control groups on the Metropolitan Readiness and Achievement tests, few significant differences were observed between the two groups (Curtis and Berzonsky, 1967).

Another program is the widely publicized work of Bereiter and Engelmann. Their direct language instruction approach has been described in detail in

Teaching Disadvantaged Children in the Preschool (1966). They are concerned with instructing disadvantaged children in the areas of language, arithmetic and reading by means of a highly academic program. After intensive study of the language problems of disadvantaged children, Bereiter and Engelmann have described the deficiencies as both qualitative and quantitative. These children are described as especially inadequate in abstract and verbal skills. The results of their programs show that these children, taught by direct instruction, make large gains as measured by the ITPA and the Stanford-Binet and that these gains are apparently maintained when the children enter school.

Overview

The present program was initiated by the investigators as a result of their interest in putting into practice some of their beliefs about preschool education for the culturally deprived kindergarten-age child.[1] Basic to their approach was a belief that children from these populations have deficiencies in their early environments which lead to later academic failure and behavior problems in school and that concentrated effort in certain areas can begin to alter this course of development.

The purpose of this study was to prepare children academically and behaviorally for first grade, while providing a resource population for specific studies in curriculum and classroom behavior modification. This study differed from those presented above in that a strong academic program was combined with a systematic classroom management program. The goal was to use an eight-week summer program to make as much impact as possible on the academic and social

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[1]This program was conducted as a special study of the Education Improvement Program (Ford Foundation), Duke University, Durham, North Carolina. The orientation of this program is not necessarily consistent with the policy of preschool education employed by the Education Improvement Program.

success of the children. It was believed that such a study would be valuable in assessing the effects of materials and processes designed to compensate for many omissions in the lives of disadvantaged preschoolers.

Throughout the duration of the program a strong emphasis was placed upon language development. Attempts were made to increase word knowledge and to improve articulation. Also emphasis was placed upon learning the letters of the alphabet and their sounds.

Two special programs were used to increase the children's productiveness, responsiveness, and cognitive skills. The program on Productivity-Responsiveness provided experiences in aiding children to become more productive in three areas: in verbal fluency by responding to ideas, in following instructions, and in manipulative activities. The Similarities-Differences program was designed to improve concept formation by increasing their ability to discriminate among stimuli.

In the arithmetic program the Cuisenaire rods were used to provide experiences in exploration and observation in mathematics and to acquire such concepts as measurement, counting, and the recognition of the symbols for numbers.

Art, music, and recreation were also part of the daily program. Emphasis was placed not only upon performance skills, but also upon social skills, co-operation and sharing.

Population Description

The selection procedure started with a door-to-door canvas in the neighborhood of the school to obtain a listing of the children who met the two basic criteria: (a) a low income family, and (b) a planned entrance into first grade in the following fall with no previous preschool experience.

All children met the first requirement; however, two children who had attended preschool the previous year were accepted into the program.

During the interview the adult in the home in charge of the child was told that the summer program was designed to help children prepare for first grade. They were also told that their children would receive a free lunch.

The families who voiced initial interest were then contacted and an offer was made to accept the child into the program. Entrance into the program was closed out when twenty children were on record as planning to attend.

Social data were collected on the children and their families. In 11 families the parents were living together and were caring for the child; in 8 families the parents were separated and in one family the child was simply reported as living with the mother. In 10 of the 11 homes in which the parents were married and living together, the fathers were the only means of support; in the remaining family, both parents worked. The mother was the sole means of support in one of the other families, and seven families were on welfare. Only two of the twenty mothers were reported as working outside the home.

The average family income was $3395, with a range of $1788 - $7800. The average educational level of the 20 mothers was ninth grade with a range from the seventh grade through two years of college. The educational level reported for 16 of the fathers ranged from the fourth grade through three years of college with a ninth grade average.

Orientation

One week prior to the opening of the program the mothers and their children were invited to come to the school for an orientation and testing session. The

objectives of the class and the academic and behavior management programs were described to the mothers. Their orientation also included a tour of the school.

During this time the children were pretested either on the Wechsler Preschool and Primary Intelligence Scale or one or more of three pretests specific to the curriculum programs.

Schedule

The class was in session for eight weeks, from mid-June to mid-August, in the summer of 1968. The daily schedule was planned to provide time for instructional periods and for play and relaxation. The daily schedule is presented in Appendix A.

Chapter II

Behavioral Management

The two teachers had been involved in previous individual studies in classroom behavior modification and were therefore experienced in the systematic application of social reinforcement and isolation, the two techniques providing the general approach to behavioral management in the summer program. Children were verbally and non-verbally reinforced by the teachers for productive classroom activity. The criteria for reinforcement varied from child to child in that a response to a very elementary question might be highly praised if the child typically gave no response, but merely accepted if the child had previously demonstrated his knowledge. By gradually raising the criterion, the teachers attempted to shape the behaviors of the children.

Mildly inappropriate behaviors, such as interrupting, were typically redirected once by a statement of the desired behavior. For instance, to an inattentive child, a teacher might have said, "You should be listening to me, John." Continued mild disruption was punished by loss of time with toys which was a daily activity available for fifteen minutes, or isolation from the room if the disruption intensified. Unproductive but nondisruptive behaviors, such as daydreaming, were typically ignored by the teachers unless the child was being strongly reinforced by his peers.

Isolation was contingent upon behavior which the teacher deemed very disruptive to the other children or to herself. A child was typically warned that his behavior, if continued, would result in isolation from the class. If the child had been warned on several previous days for the same behavior, he was isolated without another warning. Isolation consisted of the child's sitting

on a chair in the hall outside of the classroom for three to five minutes. In some cases, the child was given a three-minute egg timer to time his own isolation; he could return to class when the sand had completely shifted. The consequence of not remaining seated in the hall until permitted to return was a warning that he would not be allowed to return to school the following day. Continued disobedience of the isolation rules resulted in staying home the next day only. This consequence was employed only once.

Social reinforcement and isolation provided the basic system into which two types of token reinforcers were integrated. For the first six weeks, tokens exchangeable for material goods were employed. During the last two weeks, the tokens were exchangeable for time to engage in certain activities.

Token Programs

Store Tokens. The tokens, or check marks, were delivered to the child on a small index card attached to a yarn necklace which hung around the child's neck. The card was divided into squares on both sides so that there was a total of 50 cells which could be filled with checks.

On the first two days of school, delivery of checks was always paired with delivery of food. The food was either an M & M, a raisin, or a piece of cereal with the latter two delivered more frequently. The children were told initially that they received checks for being "good workers and good friends." Specific instances often included a statement of the exact behavior being reinforced. By the third day, the frequency of checks remained stable at a mean of 17 per child, but delivery of food decreased so that a check was not always accompanied by food. The purpose of these initial three days was to establish checks as conditioned reinforcers by pairing them with both social and material gain.

On the fourth day, the checks became exchangeable for a variety of material goods. A miniature store was set up in a room near the summer classrooms and was stocked with a variety of items, including school supplies, toys, and edibles. No single item cost more than $1. These items could be bought by the students with their checks at an approximate two checks:one cent ratio. The contents of the store bore price tags indicating the number of checks required for purchase. To aid the child in understanding the relationship between the checks and the prices, bar graphs were constructed for each price level.

The store and the system for exchange were demonstrated to each student individually during the morning of the fourth day. During the last half hour of each day, the children exchanged their tokens at the store. A teacher aide and a research technician were the storekeepers. The children were helped to count their checks and for each check they had attained, the storekeeper gave them money, in the form of small strips of black paper. The child then chose his goods in exchange for the money. The paper money was employed to help the child conceptualize the exchange by making his checks tangible. When the child had chosen his purchases, he deposited them in a shoe box labeled with his name. At the end of the school day, the children returned in small groups to claim their prizes.

The second day the store was in operation the children were introduced to the concept of saving checks. Each child had his own bank in the form of a bar graph hanging on the wall of the store. The pupil was told that he could buy the more expensive items by accumulating checks over days. If a child chose to save, the storekeeper would fill his bank to the appropriate point. In most cases, a child would designate the items for which he was saving and it would be placed in his shoe box until he had completed payment. However,

it was possible to save without a particular purchase in mind or to split the day's earnings so that one could both buy and save.

The store remained in operation throughout the sixth week of the program. During the third week, the exchange for money was eliminated for most children so that they counted their checks and the storekeeper accepted their card as payment. During the fourth week, it was noted that only two pupils had never saved any tokens, despite verbal encouragement to do so. Another child had saved only once. On the last day of the fourth week, these children were paid five tokens for saving some of their tokens. All three children saved the majority of their tokens that day, but spent some in direct exchange. All saved enough tokens on succeeding days to obtain their chosen items and two of the three chose another item for which to save in subsequent weeks.

The goal of the fifth and sixth weeks was to begin fading the exchange system. First, the number of checks delivered was generally decreased, and second, the store was arbitrarily closed (enforced savings) for three days during these two weeks. To preclude a child from saving for an unobtainable item, items priced at over 100 checks were removed from the store during the fifth week and items over 40 checks were removed during the sixth week.

Activity Tokens. The original purpose of the tokens, or checks, was to allow immediate control of the student's behavior. A long-range goal of the program, however, was to fade away the tangible reinforcement in favor of a system more similar to the first-grade into which they would be entering. Rather than eliminate tokens entirely, their value was changed. Beginning with the seventh week of the program, the store was discontinued and the checks were exchangeable for time at preferred activities.

Check marks were retained as the token, but the necklace cards were redesigned. Under this system, there were two exchange periods daily. Every

card had a white side and a yellow side, both divided into ten cells. Each child had to earn his quota of ten checks on the white side of the card during the first three academic periods of the day in order to participate in toy time from the beginning. Toy time was fifteen minutes daily during which the children were allowed free access to all toys and most equipment with minimal supervision. Any child who had not attained ten checks had to sit quietly at a table one minute for every check he lacked.

The yellow side of the card was employed during the two academic periods after recess. These checks were exchangeable for time at the last activity of the day which involved art, music, or independent language activities. This procedure was in operation during the last two weeks of the program.

Descriptive Data

Store Tokens. On the first day of school, the students received a mean of 20 pairings of food and checks throughout the day with a range among students from 13 to 28. An average of 18 checks per day was maintained over the three days before the introduction of the store. During the first seven days of the store a mean of 17 checks was delivered. It was decided that the frequency of tokens was not sufficient for optimal control of the pupils' behavior. Consequently, the mean number of responses increased to 19 for the third week and remained at that level during the fourth week. The fifth week marked the beginning of decreased tokens with a mean of 15, further decreasing to 12 during the last week of the store.

However, this trend was not true for all children. The five children in the low academic group initially received more tokens than the other groups and increased their tokens during the middle two weeks. Delivery of tokens also increased during the third and fourth week for the eight in the middle

group, while it decreased slightly for the seven students in the high group. During the last two weeks, all groups received fewer tokens, but the low group still received tokens at a frequency almost equal to the initial rate of the other two groups. These trends are fairly consistent within each group.

In summary of these differences, the low academic group always received more tokens than the other two groups. The low and middle groups received an increase in token frequency before the final decrease, while the high group received a steadily decreasing amount. These differences do not parallel differences in frequency of appropriate behavior. On the contrary, a high level of token reinforcement usually indicated lack of behavioral control by other means. For instance, the interest and attention of the high group in academic work negated the necessity for a high level of token reinforcement. Other factors such as success, progress, and knowledge, were evidently sufficient for sustained productive behavior.

At some point in the five weeks, all the children saved their tokens for at least one item. The items saved for ranged in price from 20 to 100 tokens in intervals of ten tokens with the most expensive items priced at 125 and 200. The most frequently saved for items, priced at 50 and 60 tokens, could usually be obtained within two to four days. The distribution of items obtained from saving according to its token price is presented in Figure 2-1.

Individual patterns of saving varied greatly. As described previously, two children had not saved any tokens and one child had stopped saving by the end of the fourth week of the program. When paid five tokens on one day to save, all three saved and two chose a second item for which to save after obtaining the first one. The behavior of saving appears to be easily manipulable in this situation. One child saved on every single day, usually all of his tokens. This pattern was almost matched by a couple of children who

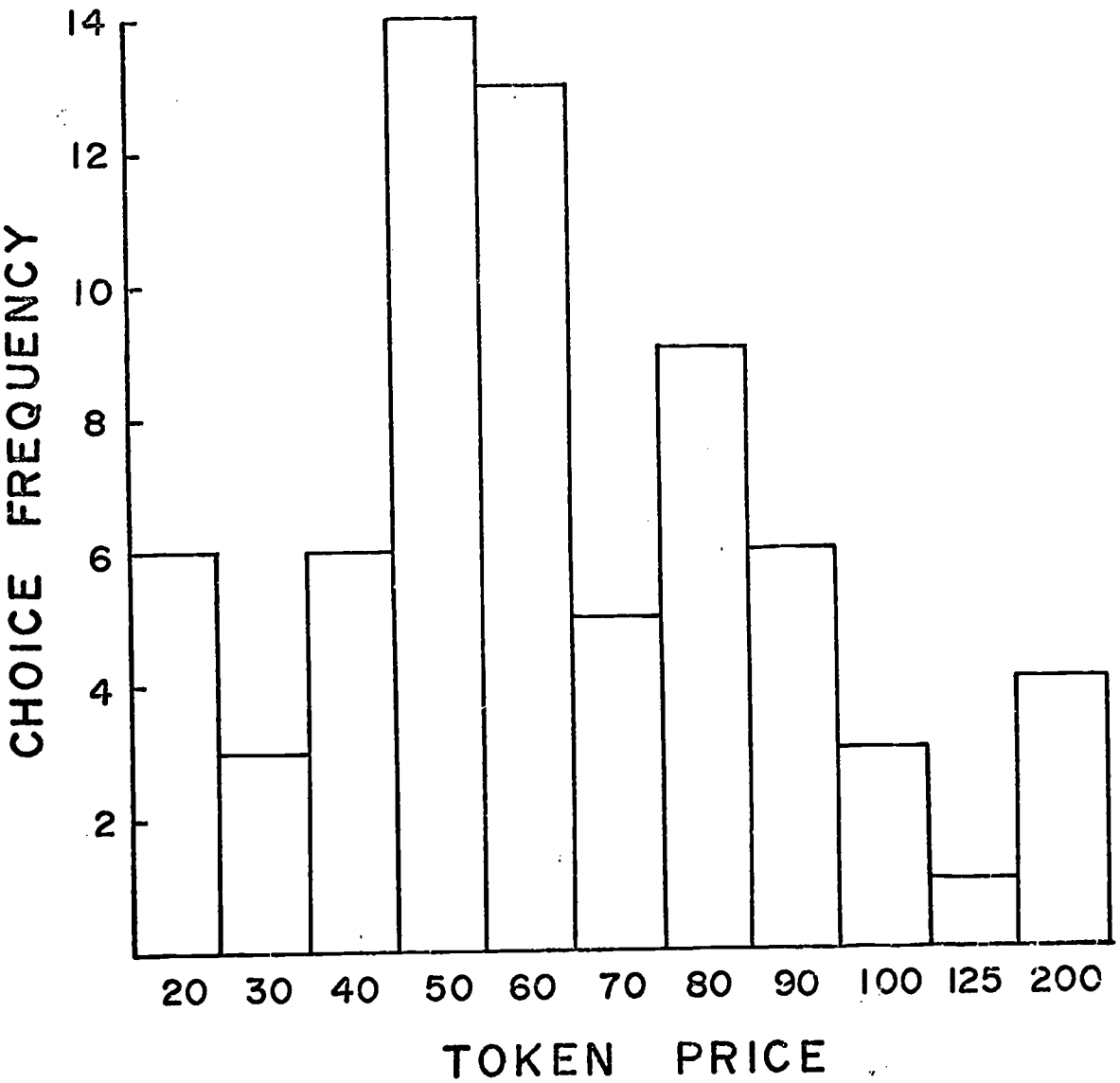

Figure 2-1. The frequency for which items of different token value were saved

were consistent savers. One child did not save any tokens until the third week of the program after which he saved consistently. The most typical pattern was to spend approximately a fourth of the day's tokens in direct exchange, usually for candy, and to save the remainder, usually toward a moderately priced item. Considering each trip to the store as an event, during the first full week of the store, in 62% of the exchanges some tokens were saved, rising to 80% during the next week. In the fourth, fifth and sixth week of the program, tokens were saved in 68, 77 and 71% of the exchanges.

Activity Tokens. As previously described, during the last two weeks of the program the tokens were exchangeable for time at preferred activities. Ten checks permitted entrance to the activity with one minute delayed entrance for every check less than ten. This system was employed twice a day. During the first week, a mean per child of 7.7 checks was obtained daily within the first activity period, and a mean of 7.5 checks within the second. During the second week a mean of 7.4 checks was delivered daily during the first activity period and 7.7 during the second. The mean number of checks delivered did not appear to vary with the time of the day or between the two weeks. The percentage of children losing any time was 36 and 42% for the two parts respectively for the first week and 38 and 31% for the second week. Considering the daily percentage of children losing time, there was an increase toward the end of the first week and a general decrease again by the end of the second week.

Behavioral Data

Data were collected for three reasons: (a) to be able to behaviorally compare data from these children with similar classes, (b) to observe changes across the program, and (c) to assess differences in behavior during the different program activities. Throughout the summer program, checks were

taken on the children's behavior according to a modified version of the Coping Analysis Schedule for Educational Settings (Spaulding, 1967). This modified version is presented in Table 2-1.

Data were collected by a paper and pencil time sampling technique which involved coding behavior at ten-second intervals. Data were collected every Tuesday during five activities: Language - the Sullivan program, Language - the speech program, Language - individual work, Arithmetic, and Cognitive Training. Four reliability estimates between the two observers ranged from 80 to 100%. (Reliability = total number of agreements / total number of agreements + disagreements x 100.) A similar procedure has been described in detail in a previous study (Wasik, Senn, Welch, and Cooper, 1969).

In Table 2-2 the average percent of time the children were behaving appropriately is presented for each activity period for each week. Observations on all children present on the day of data collection are included in the averaged data. From the data in this table it is apparent that time spent behaving appropriately varied little across weeks or activities.

The data from the summer kindergarten can be compared with normative data using CASES collected in an EIP kindergarten during the 1967-68 academic year. The appropriate behavior of the regular kindergarten was 94.5% in a free play activity and 84.5% in a language program. Comparing these percentages with those in Table 2-2, it is seen that the amount of time behaving appropriately in free play was similar for the two groups, but the summer kindergarten children spent more time behaving appropriately in a structured language group than did the regular kindergarten children.

There were changes that are not reflected by the data in Table 2-2. During the first and second weeks of the program the children were almost "too good," although the investigators and teachers had been prepared for a

Table 2-1

A Modified Version of the Coping Analysis Schedule for Educational Settings[1]

APPROPRIATE

3a. Manipulating and Directing Others: Manipulating, commanding, or directing others appropriately; enforcing rules.

5a. Self-Directed Activity: Working independently, such as reading, writing, or constructing; continuing to work in the absence of immediate supervision.

7a. Sharing and Helping: Contributing ideas, interests, materials; helping others; initiating conversation.

8a. Social Interaction: Cooperative behavior, such as talking, studying, or playing with a peer.

9a. Seeking Support, Assistance and Information: Asking teachers or peers for help, support, direction or explanation.

10. Following Directions Passively and Submissively: Following requests, answering direct questions, working only with teacher supervision.

INAPPROPRIATE

1. Aggressive Behavior: Direct attack on a child or teacher--grabbing, pushing, hitting, pulling, kicking, name-calling; destroying property.

2. Inappropriate Attention-Getting Behavior: Activities which seem to result in attention from others such as annoying, bothering, belittling, or criticizing others; noise making or loud talking.

4. Resisting Authority: More than a 5-10 second delay in carrying out teacher's directions. Physically resisting instructions or directions, for example, saying "I won't do it," and leaving the room.

11. Visual Wandering: "Checking on" activities of adults or peers.

12. Nonproductive Repetitive Behavior: Rocking or fidgeting; sleeping.

13. Withdrawal: Physical movement away from an on-going activity; hiding.

3b, 5b, 7b, 8b and 9b. These categories have the same definitions as those with corresponding numbers under the Appropriate heading, but are coded as inappropriate when they occur at other than the appropriate time or place.

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[1]Spaulding, Robert L. An Introduction to the Use of the Coping Analysis Schedule for Educational Settings (CASES).

Table 2-2

The Average Percent of Time in Appropriate Behaviors Presented by Activities Across Weeks

Weeks	Language (Sullivan)	Language (Speech)	Language (Individual)	Rods	Cognition Program	Activity (Free Play)	Total
1	95.0	98.3		97.3	97.9		
2	92.4	99.7	92.0	97.5	98.6	99.4	97.4
3	93.9	98.5	91.8	91.6	94.1	100.0	95.1
4	94.0	99.1	95.6	98.0	98.2	95.8	96.8
5	96.7	98.5	93.5	96.7	97.6	99.7	96.6
6	97.7	100.0	92.7	99.3	92.8	97.6	96.9
7	96.5	97.7	99.5	98.7	99.5	97.3	98.6
8	96.8	95.6	96.2	93.2	98.1	100.0	96.0
$\bar{X}$	95.4	98.5	94.5	96.5	97.1	98.5	96.8

very unmanageable group. Several factors were possible influences on the children's behavior those first two weeks. All but two of the children were experiencing school for the first time, while the Negro children were probably dealing with white adults for the first time. Also, the behavior management program had been put into effect the first day of the program and the children had been constantly reinforced for appropriate classroom behavior.

By the second week the children had become much more active, both appropriately and inappropriately. At this point the value of the contingencies arranged in the behavior management program became obvious.

Chapter III

Pre-reading and Language Curricula

The pre-reading and language programs selected for use involved varied activities and goals. The goals included increasing verbal productivity and improving articulation as well as discrimination of the names and sounds of the letters of the alphabet. Art was combined with the language program to help the children understand the relationship between speaking, writing, and reading.

One hour and forty minutes daily was allotted for the pre-reading and language activities. This time was distributed daily into twenty minutes of the Sullivan program - Readiness In Language Arts (Buchanan, 1967), twenty minutes of a phonics program, twenty minutes of supplementary language activities, and forty minutes of language-oriented art, music, or further supplementary activities. For the first three activities, the children were divided into three homogeneous groups according to pre-program test results and early teacher evaluations. Each of the three teachers presented a different language program. The children moved from place to place while the teachers remained stationary. For the additional forty minutes the children were divided into two groups at random with each receiving art instruction on alternate days. For the first four weeks, one group was involved in an art activity, while the other was involved in a music activity. For the last four weeks, music was replaced by supplementary language activities.

Pre-reading

The Sullivan reading readiness program (Buchanan, 1967) was presented to provide continuity with the Sullivan Programmed Reading series (Buchanan, 1968) which the children would receive in the first grade. The program is entirely teacher administered, involving no workbooks or other written responses. The goals of the instruction were to teach basic information such as names and sounds of the letters, concepts employed in reading, and skill in following directions, asking questions, and drawing conclusions.

There are six books in the Sullivan series. All pupils were presented Book I which included instruction on concepts of left and right, recognition of twelve colors, identification of geometric shapes and several animals, and recognition and identification of letters a, b, c, and d. The animals were employed to develop a story sequence within which the information was presented. All pupils were presented Book II which involved recognition and identification of all small letters of the alphabet and naming the letters in words from left to right. Book III, consisting of instruction about capital letters, was not presented because small letters were used in all activities. Book IV, started by all groups, involved sound-symbol relationships, the concept of reading by sounding letters, and a vocabulary of 20 three-letter words. The three groups progressed to various points in this book paralleling their ability level. None of the groups progressed to Books V and VI. The children in the highest ability group began the primer workbooks. They were allowed to use these books at the end of sessions in which the entire group had been particularly cooperative and productive.

Phonics

A Manual of Speech and Language Stimulation Lessons (Taylor, 1968) was used for the phonics program. Arranged in speech sound units, the lessons of

this program provide a multi-sensory approach. The child labels and produces the sound in isolation, as well as in association with a jingle, a visual cue, or a hand dramatization or "sound personality." The emphasis of the program is on learning speech sounds within meaningful language experience, as part of a pleasurable activity, and through multi-sensory techniques. All three groups received the same lessons although the number of activities within a session was dependent upon the progress of the group. Throughout the eight weeks, eleven consonants were presented. At the beginning of each of the phonic sessions, the children of each group chose one object in the room and the teacher would write its name. The children learned to read these words by sight and reviewed them each day. The point of this activity was to illustrate to the children that the teacher could write what the children said and they could read what she wrote.

Group Language Activities

In addition to the two highly structured periods, a twenty-minute period was held daily for supplementary activities. In the beginning of the program, the emphasis was on listening and discussing what they had heard. During this initial two-week period, any speech production was encouraged without any attempt at speech correction. The children watched films or listened to either recorded stories or stories read by the teacher. These activities were followed by teacher-led discussions. During these discussions, a tape recorder was often employed to allow the children to hear their own contributions and speech. The tape recorder served to stimulate speech production.

When the first stories were read to the children, they were given instruction about the characteristics of books and written language. For instance, the group discussed the definitions of a book and its cover, pages, title,

illustrator, and author. It was stressed that one learns letters in order to be able to read the words in books.

Approximately once or twice a week throughout the last six weeks of the program, each group received a session with a program called DETECT: A Sensorimotor Approach to Visual Discrimination (Gould, 1967). This program consisted of tachistoscopic presentation of visual stimuli and workbooks in which the pupil marks the stimulus matching the one presented. By choosing the matching stimulus from three alternatives in his workbook, the pupil practices coordinating visual fixation to and from distant and near points. Directionality, as well as physical similarities and differences, is included as one of the possible distinguishing characteristics. Only the first of three workbooks was employed during the summer program. The stimuli presented were familiar objects, geometric forms, numerals, and letters. The difficulty is graduated so that the most dissimilar objects are compared first, followed by the most similar in general shape, and then by objects dissimilar in directionality.

The goals of the program were to develop analytical skill by practicing visual discrimination, eye-hand coordination, and left-to-right and top-to-bottom eye movement. In addition, the ability to concentrate and remember quickly, to use vocabulary more skillfully, and to follow directions and use workbooks were to be developed through participation in the program.

In the second period of supplementary language activities, the children occasionally received lessons from the preschool area of the Peabody Language Development Kits (Dunn, Horton, and Smith, 1968). Unfortunately, there was not time enough to employ the Peabody program on a regular basis. The pre-test scores on the Illinois Test of Psycholinguistic Abilities indicated that most of the pupils were particularly low on the Auditory-Vocal Automatic subtest which involves correct grammatical usage. Accordingly, some of the Peabody

lessons were given which provided the children with knowledge of and practice with noun endings and verb tenses.

Independent Language Activities

A period was set aside for independent language activities held several times a week at the beginning and daily during the last weeks of the program. During these periods, a third of the pupils at a time were allowed to use various instruments with a minimum of guidance. The three primary pieces of equipment employed were typewriters, language masters, and tape recorders.

Three typewriters were available to the children. In the beginning, they were allowed to type whatever letters they wished. Later the children were asked to match letters on flashboards by pressing the matching key on the typewriter. When visual matching was at a high level of correct responses, a teacher would call out letters for the children to type. A few children mastered the individual letters well enough to begin copying whole words of their choice. At all times, using the typewriter was voluntary, but only rarely was a typewriter not in use during the independent sessions. As a matter of fact, when the children were allowed to use them during "toy time," the typewriters were typically chosen by enough children so that all three were in use.

Every child was taught to use the language masters. The emphasis during the first week in all language activities was on assured success of all responses; therefore, a very easy task, echoing animal sounds, was chosen to introduce the language master. Cards were withdrawn and introduced as the children progressed. These cards were developed primarily to supplement other activities, particularly the DETECT and Peabody lessons. For example, tapes and accompanying visual cards were made to provide additional practice with

Sullivan lessons. After the children were taught to use the tape recorder, a child was given the appropriate tape for listening and recording independently.

Many books were available to the children, including the ones they had made themselves. During the independent language activities, any child could choose to spend the time "reading" the books.

Art-Language Activities

All of the art activities, in which each child participated every other day, were language-oriented. Although the art medium varied, each child was asked to tell the teacher a story about the picture he had drawn or painted. According to the Language Experience Approach (Van Allen, 1962) to reading development, the teacher wrote down the story of the pupil. Occasionally the teacher typed the child's story. Together, teacher and pupil read it back, with the latter echoing the former. Although there was always a theme for the pictures and stories (e.g., animals, family, play things), each child's story was accepted without regard for any structural or grammatical mistakes.

The purposes of this language-art approach were to encourage expression of experiences and to establish the relationships between speaking, writing, and reading. The products of this activity were collected in book form and placed in the children's library. Although the use of the Language Experience Approach (Van Allen, 1962) was not adhered to strictly either in time or technique, the basic idea was employed in all art activities.

Chapter IV

Cognitive Skills

When evaluating areas of deficiency in culturally deprived children, performance using cognitive skills (those activities referred to as thinking and problem solving) has been found to be lower for these children than for middle class children (Siller, 1957). Since performance on cognitive tasks is seen as necessary for school success, improvement in these areas was another goal of the summer program.

Although it was recognized that cognitive behaviors would probably be increased as a function of several curriculum procedures, it was felt that special programs were needed to meet the extreme deficiencies in these areas. The two special programs that were selected for use were developed as part of a research grant to study cognitive training with educable retarded children.[1]

The Productivity-Responsiveness Program consisted of ten hours of instruction to be given in one-half hour sessions for twenty days. It was designed to increase a child's proficiency in three areas: verbal fluency, following instructions, and manipulative activities. The materials were simple tools which were used not to develop subject matter but to increase a child's facility with the materials and speed in manipulation.

The Similarities-Differences Program, which was used to give specific training in similarities-differences concept formation, was developed by McDonald (1965). The program involved ten hours of work which were to be presented in one-half hour

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[1]Grant No. 32-43-0530-5028. Office of Education, USDHEW (Harold M. Corter, Principal Investigator), North Carolina State University, Raleigh, North Carolina.

sessions for twenty days. Concept development was designed to begin with presentation of concrete objects, followed by pictures and finally by corresponding verbal concepts (Carter and McKinney, 1966, p. 7). The program developers also utilized the developmental sequence of moving from gross differences and gross similarities to specific differences and specific similarities. 'Both', 'each', 'same', 'alike', 'different', and 'similar' were some of the concepts that were taught.

Although the Similarities-Differences Program was developed for use with educable retarded children, it has been used successfully with Project Head Start children (Blizzard, 1966). The Productivity-Responsiveness Program had not previously been used with children from low socio-economic backgrounds.

Testing Procedure

Productivity-Responsiveness Test. Although both an individual test and a group test were available, the developers of the program recommended the group test as more reliable. Since it would be such a new experience for the children, testing in a group setting during the first week of the summer program was not considered feasible. Consequently, the group form was given individually to each child by one of three research technicians. Testing began during the orientation week and was completed with all but one child by the middle of the first week of class.

Posttesting was begun on the first day following completion of the program and was completed within two days. In order to maintain conditions as similar as possible to the pretest, the children were again individually given the group test.

The Productivity-Responsiveness test consisted of four major sections each with two subtests: Perceptual Speed (Cancellation and Matching),

Psychomotor Speed (Copying and Coding), Following Directions (Dots and Directions), and Verbal Fluency (Class-Naming and Children's Names).

The Similarities-Differences Test. This test was composed of three parts with two tests each: Classifications, Differences, and Similarities. The test was administered at the end of the second week of the program. It was felt that at this time it would be possible to test the children in small groups using the group test form. The children were divided into three groups for the testing with two adults present when each group test was administered. The testing time was approximately forty-five minutes for all groups. The post evaluation was conducted on the day prior to the last day of the summer program. The pretest procedure of testing was repeated for the posttest.

Training Procedure

Starting on the first day of the summer session the children had a half hour for the Productivity-Responsiveness Program. The children were divided into two groups, each taught by one teacher. The Similarities-Differences Program was introduced in the third week and was alternated daily with the Productivity-Responsiveness Program for four weeks. At the end of the sixth week the Productivity-Responsiveness Program had been completed; therefore, the Similarities-Differences Program was continued daily through the middle of the last week.

Since forty days were required for the completion of both programs and only thirty-seven days were available, slight changes were made in the administration. Whenever a teacher could, she covered more than the three parts scheduled per day on the Productivity-Responsiveness Program, within the thirty minute time limit. Also, several exercises were deleted from the Productivity-Responsiveness Program because the children did not have certain

prerequisite skills (e.g., The children could not recognize numerals and many could not count. Hence, they could not complete the exercise which involved connecting numbered dots to form a figure.).

Results and Discussion

The results of an analysis of variance on the difference between the pre- and post- evaluations on the Productivity-Responsiveness Program are presented in Table 4-1. It is apparent that there were large and significant gains on all of the posttests except three: matching, dots, and children's names. The dots test required the children to make a form by connecting dots from one to some larger number. Since this task was too difficult for the children, that daily exercise had been deleted from the program.

In Table 4-2 are presented the results of an analysis of variance between the pre- and post- administrations of the Similarities-Differences test. Significant gains from pretest to posttest were made in each subtest area and in the total score.

These two programs were initially developed for work with mentally retarded children. However, from the results of the tests it appears that the training programs were effective in helping to overcome deficiencies among the current population of culturally deprived children.

The Blizzard (1966) study with culturally deprived children attempted to determine the extent to which the training would affect their school readiness and intelligence scores. The results indicated that two Head Start groups who received the training program made significant gains on the Similarities-Differences Program while the Head Start groups without the training did not make significant gains. No significant gains were made on the subtest scores of the Metropolitan Readiness Test, but one experimental group did make a

Table 4-1

Analysis of Variance on the
Productivity-Responsiveness Test

	Pretest		Posttest		Mean	
	Mean	SD	Mean	SD	Change	F
A. Perceptual Speed	20.56	7.83	31.06	8.05	10.50	29.63**
1. Cancellation	16.72	6.76	26.28	7.33	9.56	29.03**
2. Matching	3.83	1.98	4.78	1.26	.95	3.85
B. Psychomotor Speed	5.44	4.88	10.78	3.84	5.34	24.04**
1. Copying	4.61	4.50	7.94	3.20	3.33	13.93**
2. Coding	0.83	1.10	2.28	2.14	1.45	11.31**
C. Following Directions	7.44	5.40	10.33	5.79	2.89	9.61**
1. Dots	3.61	4.18	4.89	3.78	1.28	2.21
2. Directions	3.83	2.01	5.44	2.30	1.61	15.19**
D. Verbal Fluency	13.50	4.32	19.06	4.48	5.56	26.35**
1. Class Names	13.44	4.20	18.83	4.68	5.39	24.53**
2. Children's Names	0.06	2.34	0.17	0.51	.11	1.00
Variable Total	46.94	18.68	70.67	17.36	23.73	41.76**

*$p < .05$

**$p < .01$

Table 4-2

Analysis of Variance on the
Similarities-Differences Test

	Pretest		Posttest		Mean	
	Mean	SD	Mean	SD	Change	F
Classifications	12.28	5.67	15.06	3.81	2.78	6.80*
Differences	9.11	3.77	13.00	2.81	3.89	24.13**
Similarities	9.00	4.61	14.44	3.07	5.44	30.19**
Total	30.39	11.69	42.50	8.02	12.11	52.33**

*$p < .05$

**$p < .01$

significant gain over its control group on the Metropolitan total score. No group improved significantly on the Draw-a-Man test of intelligence.

When Carter and McKinney (1966) compared pre- and post- measures on an experimental group of retarded children with Similarities-Differences training and a control group of retarded children, they found the experimental group differed significantly from the control group on eight measures including the following: Similarities-Differences Test, Similarities on the WISC, vocabulary on the WISC, Auditory Vocal Association test of the ITPA, and the verbal IQ of the WISC. The Visual Motor Association subtest of the ITPA and the Total WISC IQ approached significance (.10 probability level). These results from the Carter and McKinney study (1966) suggest that the Similarities-Differences training program was a factor in the significant gains on the intelligence tests and the ITPA presented in Chapter VI.

Chapter V

The Arithmetic Program

The arithmetic program was designed to give the children familiarity and facility with numbers and number concepts. The Cuisenaire rods, initially used with all children, are wooden rectangular rods of ten different lengths that range from one to ten centimeters. The smallest rod is one centimeter square, and each rod of increasing length is one centimeter longer. The rods are stained so that each length is a different color.

The Cuisenaire rods provide materials which a child can manipulate and study for relationships. With the rods a child quickly becomes involved in working with concepts of the number system without having to write or recite numbers in order. Rather than counting, the Cuisenaire program emphasizes measurement and relationships among numbers. However, it was felt that counting ability was necessary in an understanding of arithmetic; therefore, emphasis was placed on helping those children who did not know how to count.

In this program, it was felt that the colorful rods would help capture the children's attention and give them some initial rewarding experiences with numerical concepts. However, it was a goal of the program to eventually move away from the exclusive use of the rods into instructional procedures which would not involve the use of manipulative objects.

The aim of the arithmetic program was to establish a minimum level of efficiency with numerical concepts. The major goals for the children to reach were as follows:

1. To be able to point to and to name the ten different colors of the rods.

2. To count from one to ten.

3. To number objects from one to ten.

4. To distinguish objects and numbers in terms of larger and smaller.

5. To be able to use 'and', 'plus', and 'equal' in arithmetic statements.

6. To be able to work out simple equations by manipulating the rods.

7. To be able to make simple if . . . then inferences.

Evaluation

A review of some existing tests for arithmetic skills showed that the test items became difficult rapidly and hence would not afford a spread of scores at the lower end where kindergarten children would be expected to score. In addition, few tests involved any manipulation of concrete objects, an area in which the children would be receiving training. To meet the needs of the kindergarten program, a performance test was developed which covered counting, colors, numbers, and simple inferences.[1]

Testing Procedure

A Performance Test for Cuisenaire Rods was administered individually both as the pretest and as the posttest. This test was designed to be individually administered. The test items were arranged on cards with one question per card, and a set of 35 rods was used in administering the test. Individual pretest

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[1]This test was developed by Dr. John Kolb, Department of Mathematics Education, North Carolina State University, Raleigh, North Carolina, for use in the summer program. A copy of the complete test, A Performance Test for Cuisenaire Rods, may be obtained by writing the Durham Education Improvement Program, Duke University, Durham, North Carolina 27706.

evaluations were begun during the orientation week and were completed on all but one child by the second day of the program. The test, which usually required less than twenty minutes to administer, was well received by all the children. The posttest was begun during the last week of the program and was completed on all children within three days.

Program Procedure

For the first week the children were divided into three different groups instructed by the two teachers and one of the investigators. At the beginning of the second week the children were divided into ability groups based upon the pretest scores and informal observations of the children's performance during the first week of work. The decision to group on demonstrated ability was made because of the wide range of abilities demonstrated by the children. By grouping, the teachers were able to give general instructions to the groups as well as more individual instructions.

Each group met daily for one-half hour. Each session included both structured and unstructured (free play) times. During the structured setting, the group was often directed to carry out some activity (e.g., to build a train with rods; to find a rod longer or shorter than one held up by the instructor; to find out how many white rods were needed to equal the length of a blue rod). In the unstructured part the children were permitted to manipulate the rods in any way they chose.

Each teacher kept a daily diary of the events during her rod group. The diaries provided valuable information for the teachers as they took over different arithmetic groups during the summer. The initial sessions of work with the rods followed the suggestions given by Gattegno in Mathematics with Numbers in Colors (1966). At first, qualitative work was begun by introducing

equivalence by color and length. During this time children were encouraged to call the rods by their color. Then, children were asked to form trains; that is, they placed rods of different lengths and colors end to end. The concepts of longer, shorter, and equal were introduced, as were longest and shortest. Staircases were made by placing rods side by side so that the height of the rods increased or decreased. Making staircases of the rods enabled the children to become more familiar with the comparative lengths of the rods. The children were then introduced to addition, subtraction, and simple equations and the concepts of odd and even. During many of the sessions, individual work also was done with the children.

Test Results

In Table 5-1 the results of an analysis of variance for the subtests and total test scores are presented. For the total score and each of the subtests - counting, colors, and inferring - the differences between pre- and posttest scores were all significant at beyond the .01 level. Thus, one can conclude that there was a significant change in the class over the length of the program. Although there was probably overlap in training between the arithmetic and language programs, the increased performance on the test items was probably a function of the specific training given with the rods.

Discussion

There is controversy concerning the use of concrete objects versus an emphasis on abstract concepts to teach arithmetic skills to culturally deprived children (Bereiter and Engelmann, 1966). In the summer program, it was decided that the use of the rods would possibly help in the acquisition of arithmetic concepts because of their extrinsic motivational factor. In one comparison

Table 5-1

Analysis of Variance on Performance
Test: Cuisenaire Rods

	Pretest		Posttest		Mean	
	Mean	SD	Mean	SD	Gain	F
Counting	5.17	2.06	6.61	2.00	1.44	26.12**
Colors	12.50	4.27	18.06	3.24	5.56	42.46**
Inferring	11.06	1.63	12.83	.92	1.77	21.44**
Total	28.72	6.21	37.50	5.12	8.78	85.70**

*$p < .05$

**$p < .01$

study Hollis (1965) has shown that first and second grade children taught by the Cuisenaire - Gattegno method learned the traditional subject matter of arithmetic as well as or better than those taught by the traditional approach. In addition, children taught by the Cuisenaire - Gattegno method acquired concepts and skills which were not taught in the traditional approach. There are no reported studies comparing the approach of Bereiter and Engelmann, an approach with a heavy emphasis on verbalization and counting, to either the traditional method or the Cuisenaire - Gattegno method.

Chapter VI

Evaluation

Three major areas of skills--intelligence, language and pre-reading, and social maturity--were assessed by the general evaluation battery of scales and tests. The performance functioning level was obtained for each child upon entrance into the program and again upon completion of the program. Thus, measures were obtained that could provide relative measures of performance level change. This phase of the evaluation began during orientation week and continued into the second week of the program. To obtain measures of post-program performance, the Metropolitan Readiness Test was administered the last week of the program; social maturity scales were completed the first week following the end of the program, and the intelligence and language aptitude measures were obtained the first two weeks in September. Table 6-1 lists the measures used to determine the performance levels of the children.

There were two exceptions to the above general procedure. One late entry received his initial tests during the third week of the program. Intelligence and language measures for the two children who did not return to the demonstration school in the fall were obtained during the third week in September.

Intelligence Measure

All intelligence tests were individually administered by psychometrists not directly connected with the summer program. The Wechsler Preschool and Primary Scale of Intelligence (WPPSI) was given to all children during both the pre and post program evaluations. However, four children were too old for the

Table 6-1

The Pre and Post Evaluation Measures

Pre Evaluation

I. Intelligence

Wechsler Preschool and Primary Scale of Intelligence

II. Language - Reading

Illinois Test of Psycholinguistic Abilities

III. Social Maturity

Behavior Maturity Scale

Post Evaluation

I. Intelligence

Wechsler Preschool and Primary Scale of Intelligence

Wechsler Intelligence Scale for Children

II. Language - Reading

Illinois Test of Psycholinguistic Abilities

Metropolitan Readiness Test - Form A

III. Social Maturity

Behavior Maturity Scale

Preschool Attainment Record

WPPSI scales by September. Consequently, the Wechsler Intelligence Scale for Children (WISC) was given to all children in the fall to provide valid data for those four children who were overage for the WPPSI. In Table 6-2, the results of a correlated t test for the pre and post WPPSI scores are presented. There were significant gains on three subtest scores: Information, Similarities, and Picture Completion. Verbal IQ, Performance IQ, and Full Scale IQ gains were all significant beyond the .05 level. T tests were then conducted separately on the boys' scores and on the girls' scores. These results are presented in Tables 6-3 and 6-4. The mean intelligence score for boys was more than seven points higher than for girls. A comparison of Verbal IQ and Performance IQ for boys and girls shows that the boys' Verbal IQ average was only 3.7 points above the girls while the average Performance IQ scores for boys was 11.3 points higher than the girls.

A comparison of the Full Scale IQ scores with the intelligence classification presented in the WPPSI manual are presented in Table 6-5. This comparison shows that all but two of the children were performing below the average range at the beginning of the summer. One can see the changes in scores which occurred between the pre and post administrations of the WPPSI. Also presented in this table are the ranges of scores obtained on the WISC which was administered as a posttest.

Table 6-6 presents mean scores on the WPPSI for the pre- and posttests. The average age of the children was six and one-fourth years at pretest time and six and one-half years at posttest time. For comparison, the scale score data presented in the WPPSI manual for six and six and one-half year old children are presented. One can readily see that for all three subtest scores the pre-first children made much higher gains in three months than are the anticipated gains over six months.

Table 6-2

A Correlated t Test on the WPPSI
(Overage Ss Omitted)

N = 16

	Pretest		Posttest			
	Mean	S.D.	Mean	S.D.	Mean Change	t Value
Information	7.25	2.52	8.50	2.37	1.25	2.76 **
Vocabulary	6.81	1.42	7.00	1.21	.19	.36
Arithmetic	7.88	2.09	8.37	2.42	.49	.88
Similarities	7.38	2.02	12.12	1.86	4.74	6.86 **
Comprehension	6.75	1.84	7.44	2.68	.69	1.15
Animal House	7.62	2.12	8.12	2.84	.50	.86
Picture Completion	6.25	2.38	7.62	2.42	1.37	2.15 *
Mazes	7.50	2.12	7.68	2.57	.18	.43
Geographic Design	6.25	2.70	6.50	2.36	.25	.48
Block Design	7.12	2.24	7.75	2.11	.63	1.66
Verbal IQ	82.50	8.17	91.62	9.24	8.77	4.78 **
Performance IQ	79.25	12.00	83.25	13.05	4.00	1.90 *
Full Scale IQ	79.00	9.72	86.44	10.94	7.44	4.00 **

* $p < .05$
** $p < .01$

Table 6-3

A Correlated t Test on the WPPSI - Boys Only
(Overage Ss Omitted)

N = 6

	Pretest		Posttest			
	Mean	S.D.	Mean	S.D.	Mean Change	t Value
Information	7.33	3.20	9.00	2.61	1.67	2.19 *
Vocabulary	7.50	1.76	7.00	1.10	-.50	-.54
Arithmetic	7.50	2.17	8.33	2.07	.83	.67
Similarities	8.17	1.94	12.00	2.19	3.83	2.65 *
Comprehension	7.33	1.37	8.83	2.14	1.50	1.12
Animal House	7.83	1.94	8.17	2.14	.34	.36
Picture Completion	7.33	1.86	8.67	2.50	1.34	2.39 *
Mazes	9.50	1.97	10.17	1.47	.67	.93
Geographic Design	7.17	3.66	8.00	2.53	.83	.85
Block Design	8.00	2.00	8.50	1.05	.50	.81
Verbal IQ	84.83	8.64	93.83	8.84	9.00	2.41 *
Performance IQ	86.33	11.06	91.17	8.47	4.84	1.71
Full Scale IQ	83.83	9.24	91.83	7.93	8.00	2.82 *

* $p < .05$

Table 6-4

A Correlated t Test on the WPPSI - Girls Only
(Overage Ss Omitted)

N = 10

	Pretest		Posttest			
	Mean	S.D.	Mean	S.D.	Mean Change	t Value
Information	7.20	2.20	8.20	2.30	1.00	1.73
Vocabulary	6.40	1.07	7.00	1.33	.60	1.00
Arithmetic	8.10	2.13	8.40	2.72	.30	.52
Similarities	6.90	2.02	12.20	1.75	5.30	7.57 **
Comprehension	6.40	2.07	6.60	2.72	.20	.38
Animal House	7.50	2.32	8.10	3.31	.60	.76
Picture Completion	5.60	2.50	7.00	2.26	1.40	1.41
Mazes	6.30	1.06	6.20	1.81	-.10	-.18
Geographic Design	5.70	1.95	5.60	1.84	-.10	-.17
Block Design	6.60	2.32	7.30	2.50	.70	1.41
Verbal IQ	81.10	8.01	90.30	9.68	9.20	4.09 **
Performance IQ	75.00	10.90	78.50	13.31	3.50	1.17
Full Scale IQ	76.10	9.22	83.20	11.54	7.10	2.80 *

* $p < .05$
** $p < .01$

Table 6-5

Intelligence Classification for Pre and Post WPPSI and WISC Scores

Classification	IQ Range	Pretest - WPPSI		Posttest - WPPSI		Posttest - WISC	
		Number	Percent	Number	Percent	Number	Percent
Bright Normal	(110-119)	0	0	0	0	1	5.00
Average	(90-109)	2	10.53	7 (2)*	43.75	11	55.00
Dull Normal	(80-89)	5	26.32	6 (1)*	37.50	7	35.00
Borderline	(70-79)	11	52.63	2 (1)*	12.50	1	5.00
Mental Defective	(69 and below)	2	10.53	1	6.25	0	0
		20	100.01	16 (4)*	100.00	20	100.00

*Overage Ss

Table 6-6

Means and Standard Deviations of Sums of Verbal, Performance, and Total Scaled Scores for the Summer Kindergarten and the WPPSI Norms

Summer Kindergarten (N = 16)			WPPSI Norms (N = 200 for each age group)		
Verbal			**Verbal**		
Age	Mean	SD	Age	Mean	SD
6¼	36.06	6.56	6	49.84	12.01
6½	43.44	7.36	6½	50.30	12.15
Performance			**Performance**		
Age	Mean	SD	Age	Mean	SD
6¼	34.75	8.72	6	49.64	11.66
6½	37.68	9.46	6½	49.90	10.51
Total			**Total**		
Age	Mean	SD	Age	Mean	SD
6¼	70.81	13.64	6	99.47	21.91
6½	80.75	15.44	6½	100.21	20.44

When it was realized that four children in the summer program would be overage in the fall for the norms on the WPPSI, the WISC was considered as an alternate. However, to date there have been no published data on the relationship between the WPPSI and WISC. It was then decided for evaluation purposes to administer the WPPSI to those children who were within the age norms and to administer the WISC to all children.

In order to assess the degree of comparability between the intelligence tests, t tests for correlated observations were carried out, first comparing the pre program WPPSI scores and the WISC. Since the subtests of the WPPSI and WISC are not identical, only the Verbal IQ, Performance IQ, and Full Scale IQ were compared. The results of the comparison between the pre WPPSI and the WISC for all children are shown in Table 6-7. The comparisons were conducted for the entire group and for boys and girls separately. In all cases there were significant differences between scores on the two tests. Total IQ gains for the entire group from the pre WPPSI to the WISC were 15.8 points compared with a gain from the pre WPPSI to the post WPPSI of 7.44 points.

Because of these large differences, another comparison between the pre WPPSI and WISC was conducted excluding the children who were overage for the post WPPSI. These results are presented in Table 6-8 and are very similar to those presented in Table 6-7. In all cases there was a significant difference between the IQ scores on the tests and the mean gain between the two tests for total IQ was 15.06 for the sixteen children.

The comparisons between the post WPPSI and the WISC were calculated with the overage children omitted and are presented in Table 6-9. The three IQ measures differed significantly from post WPPSI to WISC for the entire group. A comparison of the boys' scores showed differences from the WPPSI to WISC;

Table 6-7

Correlated t Tests on
Pre WPPSI and WISC

(N = 20)

	WPPSI		WISC		
	Mean	Standard Deviation	Mean	Standard Deviation	T Value
Verbal IQ	81.95	7.95	95.60	8.00	10.3374 **
Performance IQ	77.30	12.01	92.30	10.92	7.2425 **
Full Scale IQ	77.60	9.59	93.40	8.93	13.0013 **

BOYS (N = 8)

	WPPSI		WISC		
	Mean	Standard Deviation	Mean	Standard Deviation	T Value
Verbal IQ	83.50	7.82	99.50	7.71	8.2623 **
Performance IQ	83.38	11.22	93.12	11.42	3.3530 *
Full Scale IQ	81.50	8.96	96.12	7.61	8.4976 **

Girls (N = 12)

	WPPSI		WISC		
	Mean	Standard Deviation	Mean	Standard Deviation	T Value
Verbal IQ	80.92	8.21	93.00	7.37	7.1318 **
Performance IQ	73.25	11.14	91.75	11.05	7.5669 **
Full Scale IQ	75.00	9.45	91.58	9.60	9.8137 **

* $p < .05$
** $p < .01$

Table 6-8

Correlated t Tests on Pre WPPSI and WISC
(Overage Ss Omitted)

(N = 16)

	WPPSI		WISC		
	Mean	Standard Deviation	Mean	Standard Deviation	T Value
Verbal IQ	82.50	8.17	95.88	8.17	9.3438 **
Performance IQ	79.25	12.01	93.38	10.34	6.9838 **
Full Scale IQ	79.00	9.72	94.06	9.45	11.6537 **

BOYS (N = 6)

	WPPSI		WISC		
	Mean	Standard Deviation	Mean	Standard Deviation	T Value
Verbal IQ	84.83	8.64	100.83	6.21	8.2807 **
Performance IQ	86.33	11.06	97.00	8.15	2.9090 *
Full Scale IQ	83.83	9.24	98.83	6.76	6.5361 **

GIRLS (N = 10)

	WPPSI		WISC		
	Mean	Standard Deviation	Mean	Standard Deviation	T Value
Verbal IQ	81.10	8.01	92.90	7.98	6.3214 **
Performance IQ	75.00	10.90	91.20	11.28	7.1378 **
Full Scale IQ	76.10	9.22	91.20	9.95	9.1914 **

* $p < .05$
** $p < .01$

Table 6-9

Correlated t Tests on Post WPPSI and WISC
(Overage Ss Omitted)

(N = 16)

	WPPSI		WISC		
	Mean	Standard Deviation	Mean	Standard Deviation	T Value
Verbal IQ	91.62	9.24	95.88	8.17	2.3351 *
Performance IQ	83.25	13.05	93.38	10.34	4.1865 **
Full Scale IQ	86.44	10.94	94.06	9.45	4.0427 **

BOYS (N = 6)

	WPPSI		WISC		
	Mean	Standard Deviation	Mean	Standard Deviation	T Value
Verbal IQ	93.83	8.84	100.83	6.21	2.2437
Performance IQ	91.17	8.47	97.00	8.15	1.2823
Full Scale IQ	91.83	7.94	98.83	6.77	1.9986

GIRLS (N = 10)

	WPPSI		WISC		
	Mean	Standard Deviation	Mean	Standard Deviation	T Value
Verbal IQ	90.30	9.68	92.90	7.98	1.1889
Performance IQ	78.50	13.31	91.20	11.28	4.8938 **
Full Scale IQ	83.20	11.55	91.20	9.95	3.4569 **

* $p < .05$
** $p < .01$

however, the gains were not significant. For the girls, the difference on the Verbal IQ score was not significant, but the differences between the Performance IQ scores and between the Full Scale IQ scores were significant.

Discussion

The results presented above provoke some speculation. Although it had been anticipated that the children would gain from the pre to post testings on intelligence, the interpretation of these results must be accepted with caution. At least two different sets of results have demonstrated a significant increase in IQ scores when two measures were obtained over a short period of time with no specifically defined intervening program. Zigler and Butterfield (1968), in investigating the motivational aspects in IQ changes of culturally deprived preschoolers, found a significant increase in one out of three groups on the Stanford-Binet when the measures were obtained three weeks apart and the testing conditions were constant for both test sessions. Three other groups were given optimal conditions for the second test session to increase the children's motivation. When the scores of these groups on the first test were compared with the scores on the second test, all groups made significant gains in IQ scores.

In the WPPSI manual, scores are presented for two test situations with a mean retest interval of 11 weeks for 50 children. The differences obtained for the two administrations of the WPPSI IQ tests indicate a significant gain from one testing occasion to another on Verbal IQ, Performance IQ, and Full Scale IQ (Wasik, J. L., 1969).

These results certainly indicate the possibility that some gain by the children in the program can be attributable to their familiarity with taking tests. Another factor possibly influencing the gains was the reinforcement

these children received during the summer for such academic skills as paying attention, following directions, and completing tasks. Large gains in test scores after a special program are often thought to be temporary. It will be important to observe the stability of these scores across time.

Reading and Language

Illinois Test of Psycholinguistic Abilities. The Illinois Test of Psycholinguistic Abilities (ITPA) was developed as a diagnostic test for linguistic deficiencies in children. The battery of tests are based upon Osgood's revised model of psycholinguistics. According to this model, three major dimensions are necessary to specify a given psycholinguistic ability: (1) levels of organization (representational and automatic-sequential), (2) psycholinguistic processes (encoding, decoding, and automatic), and (3) channels of communication (auditory, visual, vocal, motor). There are nine tests which are classified either as representational or automatic-sequential.

Representational Level	Automatic-Sequential Level
1. Auditory Decoding	7. Auditory-Vocal Automatic
2. Visual Decoding	8. Auditory-Vocal Sequencing
3. Auditory-Vocal Association	9. Visual-Motor Sequencing
4. Visual-Motor Association	
5. Vocal Encoding	
6. Motor Encoding	

ITPA: Test Procedure. The ITPA was administered as a pretest during the first week of the program, and again during the middle of September. In Tables 6-10, 6-11, and 6-12, means and standard deviations for the pre- and posttests and results of a *t* test are presented for the total class, boys, and girls separately. Some growth in linguistic skills over a 10-week period would be

Table 6-10

A Correlated t Test on ITPA Language Age Scores

(All Ss)

	Pre-Test		Post-Test		Adjusted Mean Change[1]	T Value
	Mean	Standard Deviation	Mean	Standard Deviation		
Auditory Decoding	55.25	16.08	61.40	13.62	3.60	0.6911
Visual Decoding	63.00	11.88	72.80	15.51	7.25	2.1614*
Auditory-Vocal Association	53.50	10.54	66.45	9.74	10.40	7.5504**
Visual-Motor Association	67.35	20.22	78.80	17.42	8.90	2.0396*
Vocal Encoding	54.85	11.08	63.10	13.89	5.70	1.6740
Motor Encoding	57.10	17.82	59.75	19.26	.10	0.0203
Auditory Vocal Automatic	43.30	13.34	53.25	14.50	7.40	2.6500**
Auditory Vocal Sequential	72.15	16.65	72.50	18.46	-2.20	0.6761
Visual-Motor Sequential	55.85	9.96	68.90	12.28	10.50	3.4592**
Total Language Age	57.70	6.59	65.70	8.15	5.45	3.5492**

* $p < .05$
** $p < .01$

[1]Adjusted mean change = posttest language age - (pretest language age + time between pre and post evaluations).

Table 6-11

A Correlated t Test on ITPA Language Age Scores

(Boys)

	Pre-Test		Post-Test		Adjusted Mean Change [1]	T Value
	Mean	Standard Deviation	Mean	Standard Deviation		
Auditory Decoding	63.62	20.40	61.38	11.24	-4.80	0.4833
Visual Decoding	65.50	8.38	80.88	13.54	12.83	1.9689*
Auditory-Vocal Association	53.50	12.62	68.75	11.24	12.70	7.0935**
Visual-Motor Association	79.50	18.90	83.88	12.46	1.83	0.2671
Vocal Encoding	54.50	11.02	64.88	15.86	7.83	1.1311
Motor Encoding	65.00	21.00	62.38	19.70	-5.17	0.6029
Auditory Vocal Automatic	38.25	9.22	48.50	9.18	7.70	1.5697
Auditory Vocal Sequential	73.00	17.00	74.62	19.76	-0.93	0.3179
Visual-Motor Sequential	56.12	13.01	70.25	9.63	11.57	2.4689*
Total Language Age	60.62	4.03	67.25	5.84	4.07	2.7180*

* $p < .05$
** $p < .01$

[1]Adjusted mean change = posttest language age - (pretest language age + time between pre and post evaluations).

Table 6-12

A Correlated t Test on ITPA Language Age Scores

(Girls)

	Pre-Test		Post-Test		Adjusted Mean Change[1]	T Value
	Mean	Standard Deviation	Mean	Standard Deviation		
Auditory Decoding	49.67	9.84	61.42	15.48	9.20	1.7047
Visual Decoding	61.33	13.84	67.42	14.82	3.54	1.0534
Auditory-Vocal Association	53.50	9.50	64.92	8.77	8.87	4.4943**
Visual-Motor Association	59.25	17.32	75.42	19.86	13.62	2.4880*
Vocal Encoding	55.08	11.61	61.92	13.01	4.29	1.2057
Motor Encoding	51.83	13.87	58.00	19.62	3.62	0.6074
Auditory Vocal Automatic	46.67	14.91	56.42	16.80	7.20	2.0588*
Auditory Vocal Sequential	71.58	17.14	71.08	18.30	-3.05	0.5900
Visual-Motor Sequential	55.67	7.98	68.00	14.12	9.78	2.3671*
Total Language Age	55.75	7.37	64.66	9.49	6.36	2.6800*

* $p < .05$
** $p < .01$

[1]Adjusted mean change = posttest language age - (pretest language age + time between pre and post evaluations).

expected in the absence of a special program. To allow for this expected gain, the number of weeks between testing was added to the pretest scores. The adjusted mean change is presented in Tables 6-10 through 6-12 and was used in the correlated t test comparisons.

ITPA: Results. The mean chronological age (CA) of the children at the pretest time was 6 years 1 month. A comparison of the CA to the language age at pretest evaluation demonstrates that language performance of the children upon entrance was below the expected language age (i.e., 6 years 1 month). The scores on the posttest were generally much higher than the pretest, and in some cases at a level expected for normal students. The results show that, for the entire group, significant gains were made on the following tests: visual decoding, auditory-vocal association, visual motor association, auditory vocal automatic and visual-motor sequential. In general, the significant connected gains on subtests for the girls paralleled those noted for the total group except on visual decoding. The boys made significant changes on three tests: visual decoding, auditory-vocal association, and visual motor sequential. Gains in total language age were significant for the total group, boys and girls.

In order to better compare the different profiles of the boys and girls, pre- and posttest scores by sex are presented in Figures 6-1 and 6-2. In Figure 6-1, the profiles show mean pretest scores for the boys and girls. On one subtest girls performed at a higher level than boys. On three tests in particular the boys obtained scores as much as a language age year above the girls' score: auditory decoding, visual motor decoding, and motor encoding. The posttest profiles of subtest scores presented in Figure 6-2 are more similar than the pretest profiles. This would appear to be a function of

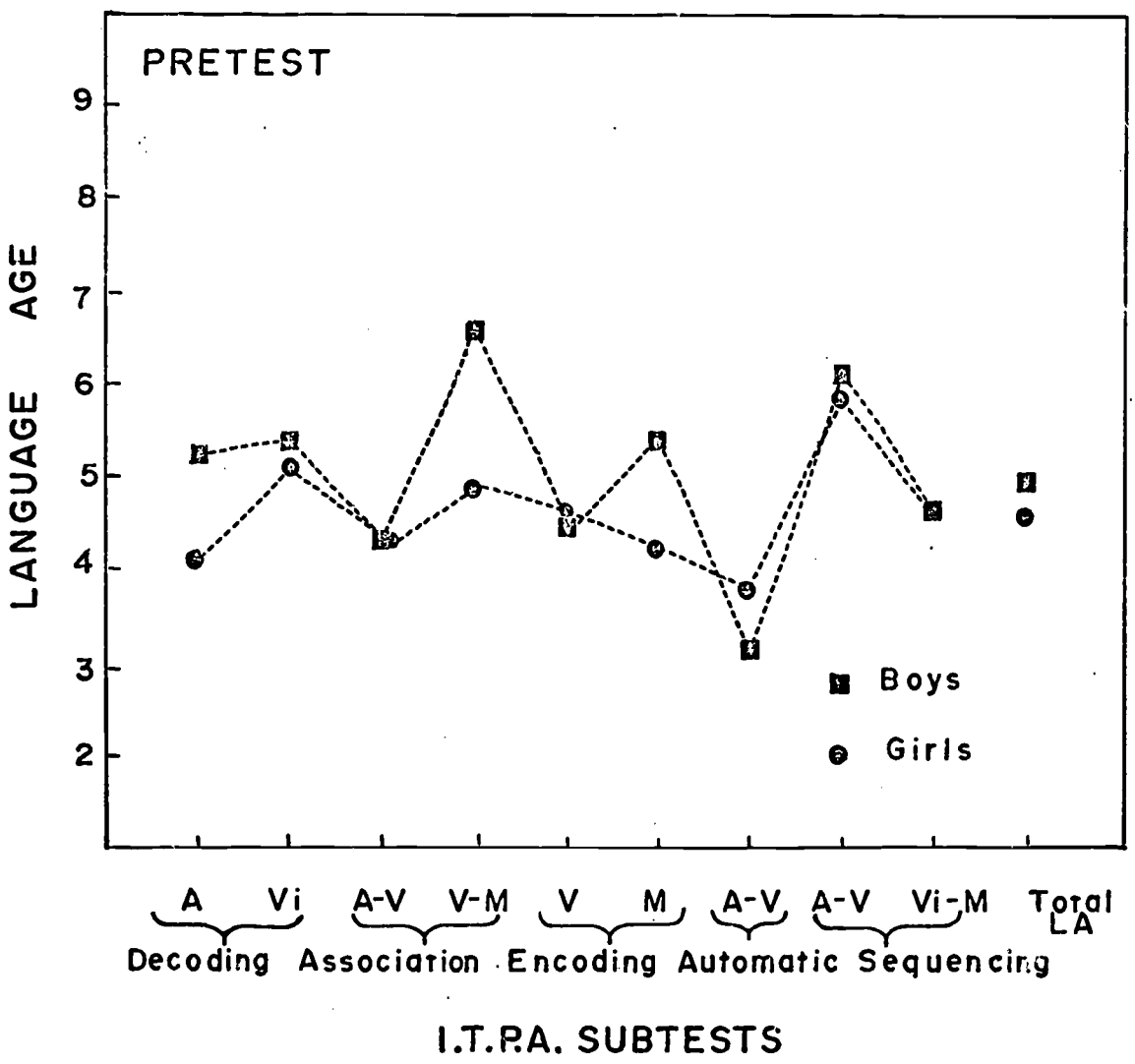

Figure 6-1. The ITPA pretest profiles presented separately for boys and girls

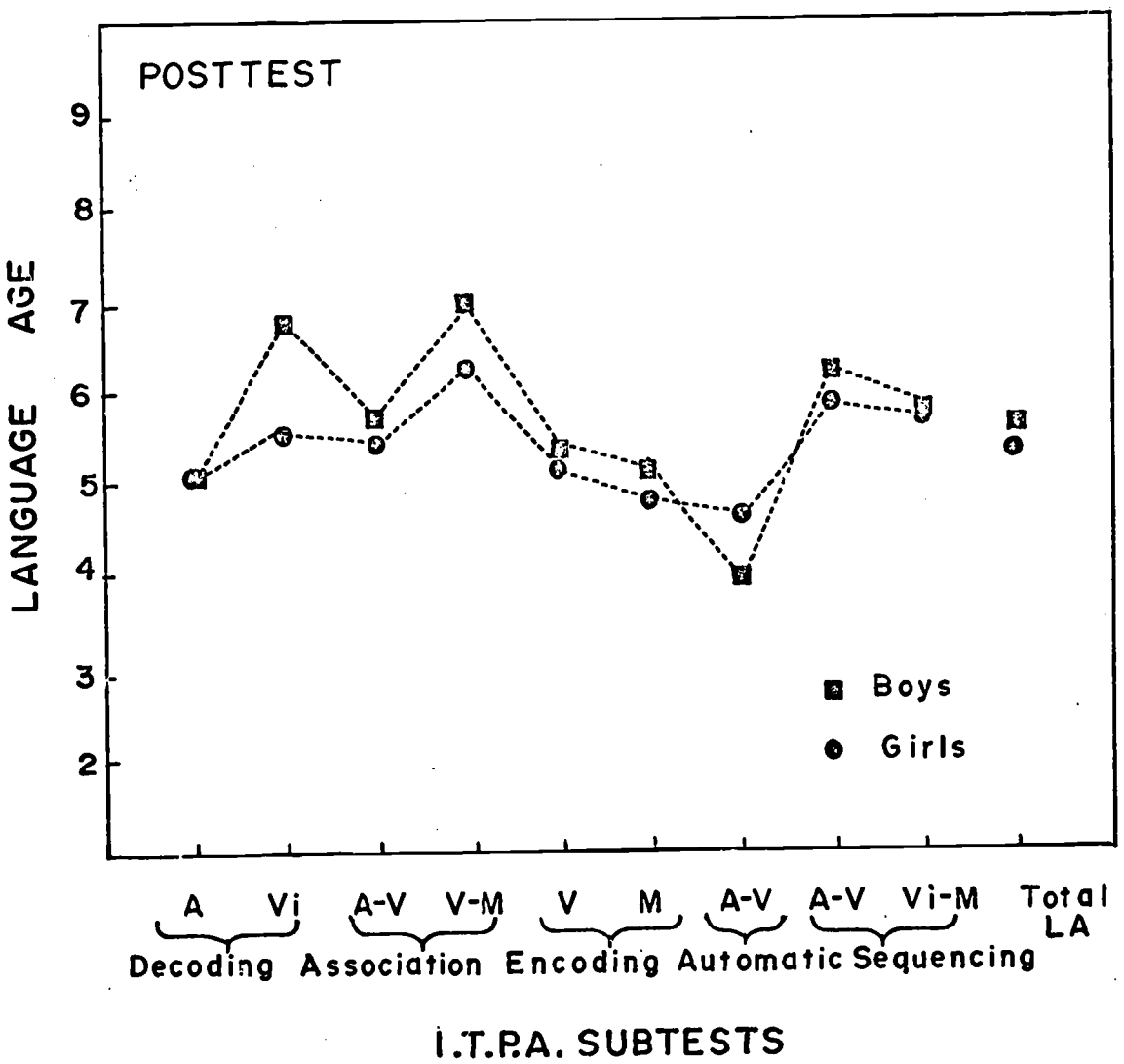

Figure 6-2. The ITPA posttest profiles presented separately for boys and girls

the larger gains made by the girls as compared to boys in language development during the program.

Since this group was biracial, the question was raised of whether the profiles were different for white and Negro children. In Figures 6-3 and 6-4 a comparison of profiles by race on the pre- and posttest are presented. Figure 6-3 indicates the two pretest profiles are very similar. Both groups obtained their lowest score on the auditory-vocal automatic and their highest scores on auditory-vocal sequencing.

In general, on both the pretest and the posttest the children were obtaining language age scores well below their chronological age. Large and significant gains were made on posttest as compared to pretest performance, and the gains were well above an average rate of gain. (An average rate of gain would be three language age months.)

In another study, Mitchell (1967) has shown that a general language development program did not significantly alter psycholinguistic skills for a summer Head Start program. Comparing the ITPA scores on a pre- and posttest basis, Mitchell found significant gains only on the Auditory Vocal Sequential subtest. The results of the summer program, by contrast, have shown gains on total ITPA scores and for several subtests.

A comparison of the average pretest profile of the Mitchell study with the pretest profile of the summer program revealed almost identical profiles. Since children in the Mitchell study had both a summer school experience and a general language program and yet made no significant gains on psycholinguistic abilities, one could suggest that the gains made by the summer program children were a function of the specific curriculum programs of the summer program.

Metropolitan Readiness Test. At the end of the summer program, the Metropolitan Readiness Test was given to all children. A small group testing

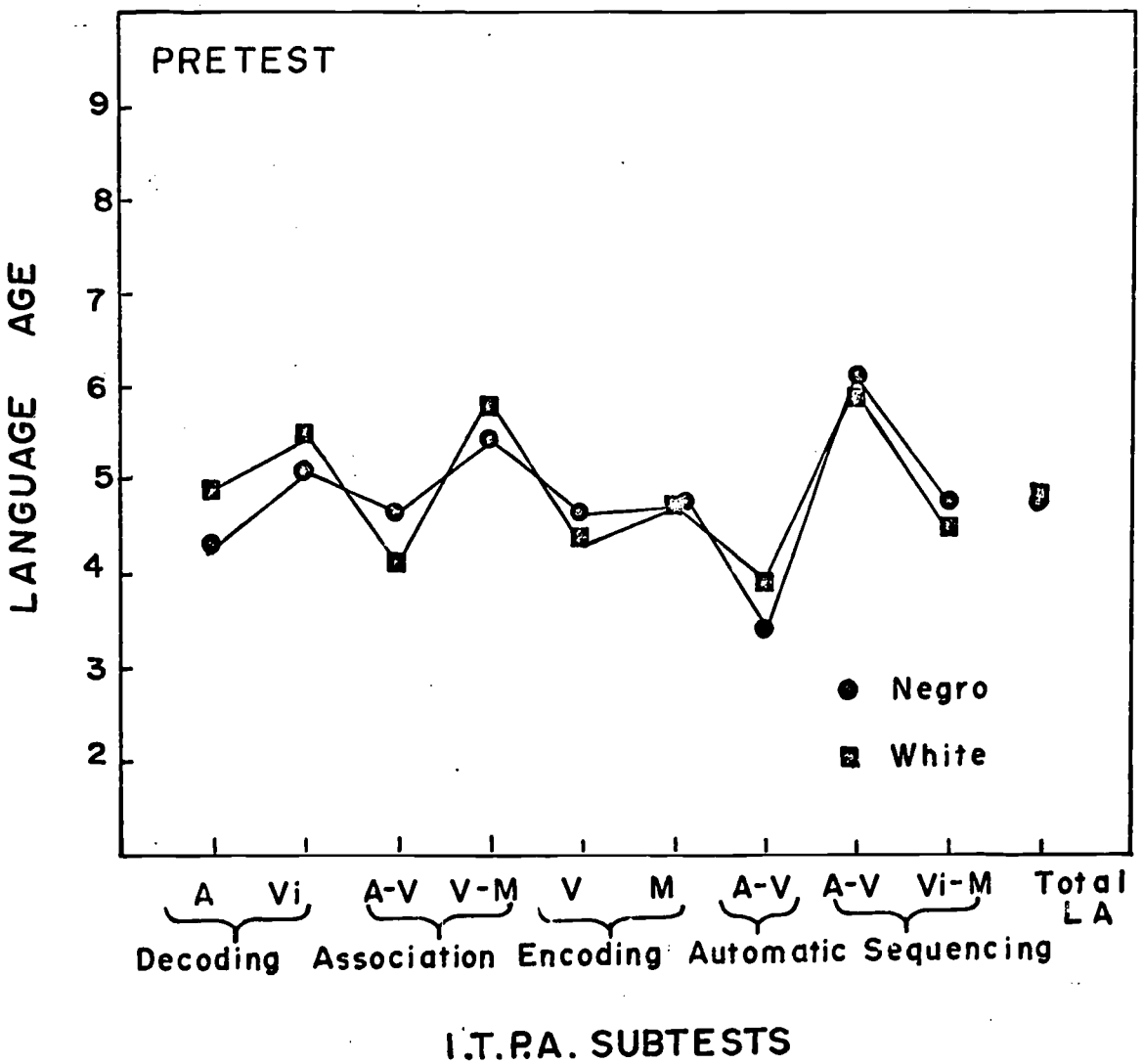

Figure 6-3. The ITPA pretest profiles presented separately for white and Negro Ss

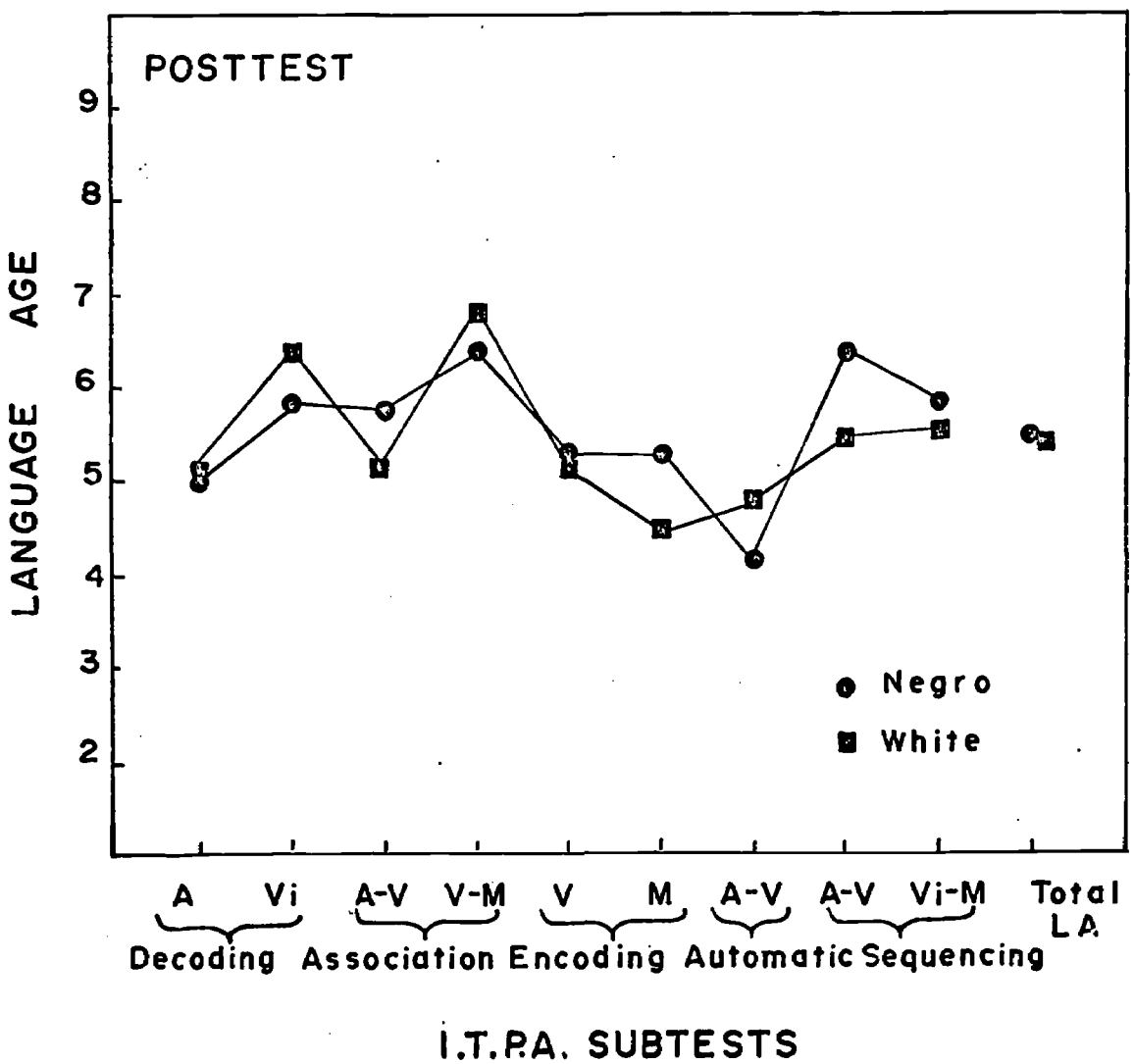

Figure 6-4. The ITPA posttest profiles presented separately for white and Negro Ss

procedure was followed. In order to minimize problems associated with group testing, one administrator and two technicians worked with each of the three groups. The means and standard deviations on each subtest and on the total test are presented in Table 6-13. In this table the means, standard deviations, medians, and quartile scores obtained by the standardization grou are presented for comparison purposes. On two subtests, Listening and Alphabet, the subjects obtained scores higher than the standardization group, while on the other four tests the program children scored lower than the standardization group.

From the median and quartile scores of the standardization group presented, it is possible to make additional comparisons of the prefirst group against a "normal" group. On only one subtest, Copying for girls, did the group average fall into the first quartile. None of the group mean scores achieved the top 25% of the standardization group.

The Metropolitan Readiness Test manual presents score ranges from which a readiness status can be determined. In Table 6-14 are presented the number of subjects who obtained total scores in the different ranges. Two thirds of the children taking the test obtained scores in the average range in comparison to what might be expected.

While it would have been advantageous to have pretest scores for comparison purposes, these subjects did not have enough skills at that time to take the test.

Evidence of the impact of the summer program in readying students for school-based learning was demonstrated by the level of functioning of these children when they entered first grade. They had a broad base of skills upon which their teachers could begin to build upon. Plans are made to assess these children again in the spring to determine if previous gains are being maintained.

Table 6-13

Metropolitan Readiness Test

N = 19

Subtests	Standardization Group					Kindergarten Group					
						Total		Boys		Girls	
	Mean	S.D.	Q^3	Median	Q^1	Mean	S.D.	Mean	S.D.	Mean	S.D.
Word Meaning	8.67	3.10	11	9	6	6.83	1.95	6.29	1.25	7.18	2.27
Listening	8.89	2.82	11	9	7	10.06	1.70	10.29	1.89	9.91	1.64
Matching	7.50	4.04	11	8	4	5.06	2.58	5.86	2.48	4.55	2.62
Alphabet	9.39	4.70	14	10	5	11.28	3.49	9.86	3.85	12.18	3.09
Numbers	12.02	4.70	15	12	9	9.17	3.73	9.00	4.00	9.27	3.74
Copying	6.81	3.88	10	7	4	3.50	2.96	4.86	3.29	2.64	2.50

Table 6-14

Scores of the
Metropolitan Readiness Test

Classified by Readiness, Status, and Letter Ratings

Readiness Status	Score Range	Letter Rating	Number of Children
Superior	Above 76	A	0
High Normal	64-76	B	0
Average	45-63	C	12
Low Normal	24-44	D	6
Low	Below 24	E	0

Social Maturity

In order to assess the level of social maturity, measures were obtained on two scales, the Behavior Maturity Scale (BMS), Preschool Form (Kim, 1967), and the Preschool Attainment Record (PAR) (Doll, 1966). The Behavior Maturity Scale was the result of an attempt to develop a scale which would consistently define measures of maturity in empirical studies. The three major factors of maturity defined by this test are Academic, Interpersonal, and Emotional. Each of these areas constituted a subtest. There are six items on each subtest and a child can be rated from one to five on each item. Thus, there is a maximum score of 30 for each factor and of 90 for the total score.

The PAR was developed as a refinement and an extension of the Vineland Social Maturity Scale (Doll, 1965). The scale is composed of 112 items which are to be answered by a person who is knowledgeable about the activities of the child. In answering items, the emphasis is not upon what a child can do, but rather what a child does. This assessment scale yields scores for eight dimensions: Ambulation, Manipulation, Rapport, Communication, Responsibility, Information, Ideation, and Creativity. There are 14 items for each dimension. An attainment age is obtained by dividing 16 into the raw score; for example, a child who obtains all 112 items would have an attainment age of 7. The attainment quotient is obtained by dividing the chronological age of the child into the attainment age and multiplying the quotient by 100. Thus, a 7-year-old with an attainment age of 7 would receive an attainment quotient of 100.

Procedure

The BMS was filled out on each child by each teacher as a pretest measure and as a posttest measure. The first ratings were obtained at the beginning of the second week of the program, allowing the teachers to become familiar with

the children and their behavior. The BMS posttest was completed the last day of the program.

The PAR was completed on each student separately by each teacher during the first week following termination of the program.

Means, standard deviations, and the results of a t test on the BMS ratings of each teacher for pretest and posttest are presented in Table 6-15. One can see that there was a drop in scores from pretest to posttest on the three subtests and the total score. For Teacher A's ratings there was a significant drop on the Interpersonal and Emotional subtests and the total score. At face value this suggests that the children were not only not improving but were decreasing in these areas. Informal observations of the children, however, contraindicated such a conclusion. When these results were presented to the teachers, they both stated quite strongly that they believed the children had increased in social maturity over the summer. One teacher suggested that she had been teaching second graders, and since at the beginning of the summer she thought of the children as so much younger than second graders, she perhaps used a more lenient standard. But when she completed the posttest, she was thinking of the children as being only a few weeks away from the first grade, and possibly used a more stringent criterion.

Correlational analyses were carried out for the pre and post BMS scores made by the two teachers for the total group, boys and girls. These results are presented in Tables 6-16 through 6-18. It is of interest to note that the correlation for the total group between the two pretest totals ($r = .87$) and the two posttest totals ($r = .88$) correlated more highly than the total pre- and posttest scores for the same teacher thus indicating the teacher's inter-rater reliability was quite high. The correlation between the first and second measure for Teacher A was .75 and for Teacher B .77.

Table 6-15

Correlated t Tests on the Behavior Maturity Scale Ratings for Both Teachers

Teacher A

	Pretest		Posttest			
Variable	Mean	SD	Mean	SD	Mean Change	T Value
Academic	26.15	3.42	25.75	4.20	-.40	.58
Interpersonal	24.25	4.66	21.45	4.70	-2.80	3.60**
Emotional	24.65	3.91	21.95	5.68	-2.70	3.31**
Total	75.05	9.34	69.15	11.72	-5.90	3.42**

Teacher B

	Pretest		Posttest			
Variable	Mean	SD	Mean	SD	Mean Change	T Value
Academic	24.70	5.56	23.20	6.76	-1.50	1.76
Interpersonal	23.20	5.98	21.80	6.15	-1.40	1.00
Emotional	25.15	6.64	23.15	6.98	-2.00	1.72
Total	73.05	15.44	68.15	16.82	-4.90	2.00

*p < .05
**p < .01

Table 6-16

Pearson Product Moment Correlations between Pre and Post Behavior Maturity Scales for Both Teachers and All Children

		A	I	S	T	A	I	S	T	A	I	S	T	A	I	S	T
Teacher A (Pre)	(Academic	1.00															
	(Interpersonal	.69	1.00														
	(Social	.50	.09	1.00													
	(Total	.92	.79	.64	1.00												
Teacher B (Pre)	(Academic	.85	.56	.60	.84	1.00											
	(Interpersonal	.70	.80	.22	.75	.70	1.00										
	(Social	.57	.17	.84	.64	.70	.37	1.00									
	(Total	.82	.59	.66	.87	.93	.80	.82	1.00								
Teacher A (Post)	(Academic	.69	.43	.64	.74	.88	.52	.71	.83	1.00							
	(Interpersonal	.59	.72	.33	.72	.51	.66	.33	.58	.51	1.00						
	(Social	.16	.07	.77	.41	.38	.08	.64	.45	.51	.39	1.00					
	(Total	.56	.48	.74	.75	.71	.49	.70	.75	.81	.77	.82	1.00				
Teacher B (Post)	(Academic	.66	.32	.74	.71	.82	.42	.74	.78	.88	.33	.55	.71	1.00			
	(Interpersonal	.69	.60	.53	.77	.69	.53	.51	.67	.68	.80	.48	.80	.60	1.00		
	(Social	.16	-.02	.75	.36	.44	.12	.71	.51	.54	.24	.91	.74	.68	.42	1.00	
	(Total	.58	.34	.80	.72	.77	.41	.78	.77	.83	.53	.78	.89	.90	.78	.84	1.00

Teacher A (Pre) | Teacher B (Pre) | Teacher A (Post) | Teacher B (Post)

Table 6-17

Pearson Product Moment Correlations between Pre and Post Behavior Maturity Scales for Both Teachers and Boys

		Teacher A (Pre)				Teacher B (Pre)				Teacher A (Post)				Teacher B (Post)			
		A	I	S	T	A	I	S	T	A	I	S	T	A	I	S	T
Teacher A (Pre)	(Academic	1.00															
	(Interpersonal	.21	1.00														
	(Social	.40	-.54	1.00													
	(Total	.87	.23	.64	1.00												
Teacher B (Pre)	(Academic	.70	-.44	.64	.56	1.00											
	(Interpersonal	.51	.53	.03	.54	.21	1.00										
	(Social	.64	-.36	.92	.79	.75	.20	1.00									
	(Total	.79	-.13	.72	.83	.85	.59	.87	1.00								
Teacher A (Post)	(Academic	.33	-.62	.70	.34	.86	-.01	.63	.65	1.00							
	(Interpersonal	.40	.49	.31	.68	.11	.36	.36	.36	.13	1.00						
	(Social	-.09	-.56	.82	.28	.27	-.29	.58	.27	.57	.37	1.00					
	(Total	.22	-.30	.81	.55	.46	-.01	.68	.51	.68	.67	.90	1.00				
Teacher B (Post)	(Academic	.33	-.75	.83	.36	.77	-.06	.81	.68	.77	-.18	.53	.46	1.00			
	(Interpersonal	.50	.01	.49	.59	.56	.13	.62	.57	.46	.73	.41	.68	.24	1.00		
	(Social	.03	-.77	.90	.27	.48	-.25	.74	.45	.64	.09	.90	.75	.79	.38	1.00	
	(Total	.32	-.67	.93	.48	.73	-.10	.89	.68	.77	.22	.78	.77	.86	.62	.92	1.00

Table 6-18

Pearson Product Moment Correlations between Pre and Post Behavior Maturity Scales for Both Teachers and Girls

		A	I	S	T	A	I	S	T	A	I	S	T	A	I	S	T
Teacher A (Pre)	(Academic	1.00															
	(Interpersonal	.80	1.00														
	(Social	.55	.31	1.00													
	(Total	.93	.89	.68	1.00												
Teacher B (Pre)	(Academic	.90	.86	.56	.93	1.00											
	(Interpersonal	.76	.88	.29	.81	.89	1.00										
	(Social	.55	.33	.83	.64	.69	.44	1.00									
	(Total	.83	.77	.65	.89	.97	.87	.82	1.00								
Teacher A (Post)	(Academic	.82	.73	.61	.86	.89	.73	.75	.89	1.00							
	(Interpersonal	.71	.87	.30	.78	.75	.83	.34	.71	.75	1.00						
	(Social	.28	.35	.71	.51	.45	.30	.75	.58	.48	.36	1.00					
	(Total	.72	.78	.66	.86	.84	.74	.75	.88	.89	.84	.75	1.00				
Teacher B (Post)	(Academic	.85	.78	.65	.90	.87	.68	.72	.86	.96	.74	.57	.91	1.00			
	(Interpersonal	.81	.86	.52	.89	.78	.72	.52	.76	.84	.86	.51	.88	.91	1.00		
	(Social	.25	.36	.61	.48	.46	.39	.74	.61	.51	.41	.96	.77	.58	.52	1.00	
	(Total	.73	.75	.67	.86	.80	.68	.75	.84	.87	.75	.77	.97	.94	.91	.79	1.00
		Teacher A (Pre)				Teacher B (Pre)				Teacher A (Post)				Teacher B (Post)			

When the correlations were obtained separately for boys and girls, the correlations are much lower for the boys than for the girls. The correlation for the boys on the two pretest measures was .83 and on the posttest measures .77. For the girls, the total pretest correlation was .89 and the posttest correlation was .97.

In Tables 6-19 and 6-20 the mean scores on the PAR by each teacher are presented. The total possible raw score on each subtest is 14. From both tables it is apparent that children were given high ratings on almost all measures. The communications dimension received the lowest ratings for boys and girls. When the two groups were broken down by race, little difference in the communications dimension for the white and Negro girls was evident, but the Negro boys received higher ratings than the white boys.

Difficulty in interpreting these scores results from the fact that there is a ceiling effect on this test. An attainment quotient of 100 is seen as average; thus, from the attainment quotient of 100.9 for the total group, these children were given an average rating for their age. However, had the test been designed with a higher ceiling level, it is possible these children would have then obtained a higher attainment quotient. The data reflect that these children were not seen as functioning below an average level for their age, and were possibly functioning at a higher level.

Table 6-19

Mean PAR Scores
Teacher A

Variable	Total N = 20	Boys N = 8	Girls N = 12	White Male N = 4	White Female N = 4	Negro Male N = 4	Negro Female N = 8
Ambulation	13.60	13.38	13.75	13.25	13.75	13.50	13.75
Manipulation	12.35	12.12	12.50	12.13	12.88	12.13	12.31
Rapport	12.50	12.06	12.79	12.12	12.75	12.00	11.56
Communication	11.50	11.38	11.58	10.75	11.63	12.00	11.56
Responsibility	13.33	12.94	13.58	13.62	13.63	12.25	13.56
Information	12.95	12.94	12.96	12.88	13.00	13.00	12.94
Ideation	12.33	12.19	12.42	11.88	12.50	12.50	12.38
Creativity	12.08	11.88	12.21	11.12	12.38	12.63	12.13
Total	100.65	98.63	102.00	97.50	103.00	99.75	101.50
Life Age	75.00	75.13	74.92	74.50	76.25	75.75	74.25
Attainment Age	75.50	74.00	76.50	73.25	77.50	74.75	76.00
Attainment Quotient	100.90	98.75	102.33	98.50	101.75	99.00	102.63

Table 6-20

Mean PAR Scores
Teacher B

Variable	Total N = 20	Boys N = 8	Girls N = 12	White Male N = 4	White Female N = 4	Negro Male N = 4	Negro Female N = 8
Ambulation	13.85	13.62	14.00	13.50	14.00	13.75	14.00
Manipulation	13.75	13.62	13.83	13.75	13.88	13.50	13.81
Rapport	13.60	13.50	13.66	13.88	13.12	13.12	13.95
Communication	10.22	9.94	10.42	9.38	10.75	10.50	10.25
Responsibility	13.75	13.50	13.91	14.00	13.88	13.00	13.94
Information	13.00	13.00	13.00	13.00	13.25	13.00	12.88
Ideation	12.35	12.38	12.33	12.25	12.25	13.50	12.38
Creativity	12.30	12.44	12.20	11.62	11.00	13.25	12.81
Total	102.85	102.12	103.33	101.75	102.00	102.50	104.00
Life Age	75.00	75.12	74.92	74.50	76.25	75.75	74.25
Attainment Age	77.25	76.50	77.75	76.25	76.25	76.75	78.50
Attainment Quotient	103.25	102.12	104.00	102.50	100.00	101.75	106.00

Chapter VII

Summary

The goals of the summer program were to build both academic and social skills in a group of culturally deprived children who would be entering first grade in the fall. Along many dimensions the program was a success even though it was clearly not possible to measure every facet of development that the investigators were interested in improving.

Significant gains were made in the areas of language, speech, pre-reading and elementary arithmetic and in the ability to handle abstract concepts.

The results of pre and post evaluations showed that significant gains had been made on the WPPSI Verbal, Performance, and Full Scale IQ scores and on the Similarities and the Picture Completion subtests. On the ITPA the boys made gains above the 5% significance level for total Language Age and for the Visual Decoding, Auditory-Vocal Association and the Visual-Motor Sequential subtests. The girls made gains above the 5% level of significance on the Auditory-Vocal Association, Visual-Motor Association, Auditory-Vocal Automatic, Visual-Motor Sequential and on total Language Age.

The results of the BMS ratings were inconclusive in that the ratings on the post evaluation were lower than they were on the pre evaluation, yet the teachers stated that this was not consistent with their belief that the children had progressed and matured during the summer. The PAR ratings indicated that the children were reaching the ceiling of this assessment test. They were rated as functioning at the expected level for their age, and without a ceiling effect these ratings may have reflected a somewhat higher level of functioning.

The impact of the summer program was supported by the level of functioning of these children when they entered first grade. They had a broad base of skills upon which their teachers could begin to build. Plans are made to assess these children again in the spring to determine if previous gains are being maintained.

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Appendix A

Daily Schedule

8:30 - 8:35	Orientation	
8:35 - 8:45	Writing	
8:45 - 9:05	Sullivan pre-reading	3 groups
9:05 - 9:25	Phonics	
9:25 - 9:45	Language-reading activities	
9:45 - 10:00	Toy Time	
10:00 - 10:20	Recess	
10:20 - 10:30	Juice & Rest	
10:30 - 11:00	Rods - 3 groups	
11:00 - 11:30	Productivity - 2 groups	
11:30 - 11:50	Lunch	
11:50 - 12:20	Art/Music - 2 groups	
12:20 - 12:30	Store & Dismissal	

Appendix B

Information from Parents on Summer Kindergarten Children

1. It is not unusual for children to be a problem at this age. In what ways have you noticed that _____ has been a problem?

    1. Irritable, whine when she can't get what she wants
    2. Mischievous
    3. Quietness
    4. Lazy, stubborn
    5. He cries a lot
    6. None that stands out other than being real sensitive
    7. Bossy, gives a little back talk
    8. He has not been a problem
    9. Timid, plays rough sometime and get hurt
    10. Child likes to have her way
    11. She cries sometime
    12. Stubbornness
    13. No problem
    14. He likes to get his way about things
    15. Cross when tired
    16. No problem
    17. Tell everything she see
    18. She cries a lot to have her way, seems stubborn
    19. Stubborn
    20. Wakes you up early in the morning

    What do you do then?

    1. Nothing
    2. Make her come in house and sit down
    3. Give him attention
    4. I make her do whatever I have for her to do by whipping her if necessary
    5. Sometime I call him a girl
    6. Reassure her that she can do whatever it is that she is reacting to
    7. Tell her how unbecoming it sounds and how friends are lost like that
    8. --
    9. Let her cry it out
    10. I just whip her and then she comes under control, she's smart all right
    11. I ignore it
    12. Stand her in corner, whip her, or talk with her about it, sometimes nothing works
    13. --
    14. Whip him

15. Makes him lie down for a while
16. --
17. Nothing, except tell child not to talk so much
18. I tell her she must not have her way all the time
19. Still treat him the same, do not give in to him
20. I get up and fix breakfast and feed him

Are there special times when he is a problem?

1. Tired when she first gets home from school
2. When someone bothers her
3. Tired
4. When she gets out of school in the evening
5. When someone agitates him
6. When she's tired
7. Usually in the mornings
8. No
9. In the mornings and late afternoon
10. Mostly all the time
11. No
12. When she is tired, when older sibs pick on her
13. --
14. When he wants to go off in the neighborhood
15. Usually at night
16. --
17. Any time
18. Usually in the morning before school
19. When sick or not feeling well
20. Since he has been in kindergarten he wakes me up real early

2. When _____ does something that you don't want him to, what do you do? (Get two examples) (If parents should answer, "Well, I might punish him," ask how, for what behaviors, how often.)

1. Good spanking - when she fights, talk to her - when she disobeys
2. Keep fighting - whip her, call her and she won't come - whip her
3. Have him sit down for a while or talk with him, spank him occasionally
4. I whip her if I ask her to go someplace to do something for me and she refuses, I whip her and make her go on
5. I tell him God don't like little bad boy, he will slow down
6. Talk to child, may whip her if talk has no effect (very good child rarely gets out of line)
7. Talk to her, believes that Paula has never had a whipping about bossy and sultry behavior
8. Whip him for being hard-headed
9. Give him a whipping - profanity
10. I whip her or make her go to bed, going out of yard - whip her, when she picks on sister - make her go to bed
11. Spanking, talk to child, and won't let her go anywhere (when she disobeys)
12. Spanked and put her to bed for painting on walls with crayon, playing with matches and biting
13. Make him sit down, go to bed or whip him when he gets so he will not listen or mind

14. Whips him when mother says he cannot go off and he does
15. Makes him sit down and will not permit him to do something that he wants to do
16. Usually spank her, sometimes talk with her and ask her not to repeat the act. Fight with younger sib - spanking, slip away from home - talk with her
17. Fighting - makes her stay in the house or go to bed
18. Fighting other sibs - I make her sit down in room alone, I whip her for leaving home without my consent
19. Usually switch him - when he refuses to respond to talking, don't do anything - mad throwing things ask him to stop
20. Talk to him, may spank him if he refuses to obey - he likes to agitate the other children

3. What do you like best about _____?

1. When she eats well
2. Her not being bashful
3. Being considerate, can accept limitations
4. She cleans up the yard
5. He goes to church; he prays
6. Have not picked out any particular characteristic
7. Child seems to understand and is considerate when mother tells her she cannot have something
8. He is helpful around house helps me clean up and do the dishes
9. She's a girl (talkative) (openly)
10. Her wanting to learn
11. Being considerate, she can understand that she must not have everything she wants
12. Trying to be helpful
13. He is not sassy
14. When he comes to me and asks, "Mom who do you love?"
15. He helps mother work and talks to her as she works
16. Obedience
17. She catches on easily
18. Her desire to help clean
19. He is very understanding when told the reason he can't have something
20. Pleasing personality

When _____ does something that pleases you, what do you usually do?

1. Compliment child by telling her she is really growing up
2. Give her candy or money
3. Praise him by telling him what a big boy he is
4. Ask her if she is through cleaning the yard
5. Take him and get him something
6. I praise her
7. Praise her by telling her how smart she is
8. Praise him
9. Fix a special dish or make a promise

10. Let her keep on doing whatever it is that pleases me and praise her
11. Praise her
12. Tells her what a good child she is, how helpful she has been
13. Give him some money (He likes to wash dishes and clean bathtub.)
14. Praise him by telling him he is a smart boy
15. Might bake him a cake or let him do something that he wants to do
16. Usually promise her some money or give her some money
17. Give her money
18. Praise her and tell her thank you
19. Hand him a nickel
20. I give him something or praise his action

(Then find out what the child usually does then.)

1. She smiles and runs back to play
2. She eats the candy and spends the money, seems to be real happy
3. He likes the praise; he stands and grins, will tell mother, "Let me kiss you."
4. Goes on to play
5. He's happy and smiles
6. She bubbles, real happy
7. She acts happy, smiles, seems to really like praise
8. He loves it because he does whatever it was again
9. She smiles and is good for a long time
10. That tickles her; she enjoys it
11. She likes praise; she smiles and will try to find another way to get more praise
12. Grins and puts thumb in mouth, is real happy about what she has done
13. He shows it to other sibs and seems real proud of it
14. He starts grinning and seems happy about being praised
15. He seems to be happy and will do what is requested of him later with less coaxing
16. She seems happy and remind me about my promise until I fulfill it
17. Smiles and run to spend her money
18. That makes her happy; she smiles and seem to play better with sibs
19. He says, "Thank you," and will say the money; sometimes he accumulates a dollar saving nickels and dimes
20. He shows to the others what he received or tells him what I have said

4. (Objective: to obtain a description of preference activities. Try to obtain information also on whether or not he prefers to play alone, with peers, older children or younger children.)

1. Prefers to play with older children (sibs)
2. Prefers playing with other children
3. Child plays better with children than alone
4. Child prefers to play with peers
5. Prefers to play with other children
6. Prefers to play with other children
7. Prefers to play with peers
8. Prefers playing alone
9. Prefers to play with older children

10. Prefers to play with peers
11. Prefers to play with peers
12. Child prefers to play with older children
13. Child prefers to play with peers
14. Prefers to play with peers
15. Prefers to play with peers
16. Prefers to play with peers
17. She prefers playing with peers
18. Child seems to prefer playing alone
19. Child prefers to play alone
20. Prefers playing with older sibs

When _____ gets a chance to do what he wants to, what does he pick to do?

1. She reads
2. Plays with children (ball), go to Crest Street Park
3. Go visiting and play tag with neighbors
4. She goes visiting and plays, play house with neighbor's children
5. He goes to neighbor house and play with friends (ball)
6. She will usually type on the typewriter or get paper and pencil and write
7. Goes and visit (Tiny) - a neighbor about the same age
8. Colors, gets book and colors, (he does like to be read to)
9. Work puzzles
10. Play with her doll, likes to play with other children (baseball)
11. Plays with friends
12. Skip, color, go to park
13. He will play baseball with sibs and other children
14. Ride his bicycle (Terry had rather play with other children)
15. He will go to neighbor's house and play on gym set with other children
16. Visit grandmother, ask for money to go to store, ask to go and play with cousins
17. She goes to play ground at Crest School and seesaw, swing, goes on trips (ex. Duke Park, Children's Museum)
18. She loves to wash her socks and panties for school the next day
19. Like to make things, fix things (likes to play alone)
20. Sing and bang on the organ

What else?

1. Plays with other sibs
2. Jump rope
3. Plays with trucks
4. Plays ball
5. Plays with younger brother
6. Play with younger sibs
7. Swing, picnic
8. Plays ball, push tire (child likes to play alone)
9. Go out doors and play ball, jump rope with other children
10. Tries to write

11. Reads or looks at pictures in books
12. Play with baby doll
13. He play with his gun
14. Plays mother and father with other children
15. They will play ball
16. --
17. --
18. She likes to care for the baby (plays with doll and tricycle)
19. Ride bicycle, likes to play over at Duke Park, likes to paint
20. Draws

How often?

1. Daily
2. Usually daily except going to the park - goes to park about two times per week
3. Daily
4. Daily unless it rains
5. Daily
6. Daily 5 or 6 times
7. Everyday
8. Daily or 2 or 3 times a day
9. Daily
10. Everyday plays with doll and threads a needle and try to make the doll a dress
11. 2 or 3 times a day
12. Wants to do each activity at least daily
13. Most of time after school
14. Everyday
15. Daily
16. Daily
17. Goes to playground daily
18. She wants to do both everyday
19. Everyday, maybe twice per day
20. 3 or 4 times a day

5. (Objective: Parent's judgment of changes. Also, parent's attitude toward kindergarten.) Do you think that the time _____ has spent in kindergarten has had any effect on him?

1. Yes
2. Yes
3. Yes
4. Yes
5. Yes
6. Yes
7. Yes
8. Yes
9. Yes
10. Yes
11. Yes
12. Yes

13. I think he has learned better how to associate with other children
14. Yes
15. Yes
16. Yes
17. Yes
18. Yes
19. He has learned a few things, yes
20. Yes

If yes, what kind of changes have you seen?

1. She acts better, can write letters of alphabet
2. She likes to go to school, plays better
3. I think it has taken him out of the baby stage, taught him to be prompt, cried when he missed school
4. She seems to act more mature
5. He is not around in your way all the time, plays better with children
6. Learn things more easily such as alphabets, words and songs
7. Can color well, can make some letters, is not quite as bossy
8. He has grown up quite a bit (can write his name, can count and make numbers)
9. More attentive, seems more anxious to learn, can says words better
10. She tries to write her name and numbers, before school did not. She also walks around and sing songs she learned at school.
11. She acts more like a little lady, she does not seem to want to have her way as often
12. Sharing more, will read with Patty and lie down with Patty, tries to figure out things better
13. He plays better and longer at the time with children
14. He speaks plainer, will sing songs he learned at school
15. He seem more grown up, likes to go out alone more
16. She likes to write and color and play a finger game
17. Can count better, know her name when she see it
18. She thinks she's a little more grown up, spend more time trying to look nice, will get books and try to read
19. Couldn't note any changes
20. He act differently, gets up and get ready for school, plays more, tries to count and write his name

6. What does _____ say about his experiences at the kindergarten?

1. Most times I'm away, but sometimes she tells of a trip they took, and some writing they did at school
2. She says they write, type, play, go out for recess
3. He tells of songs he learned, games that they played, word sounds
4. Talks about store, doesn't know teacher's name, talks about a little mean boy who's in her class
5. He says he wants to go everyday and play with the other children. He likes the trucks and toys you can push. He likes the bus ride and also the snack
6. Does not talk about what goes on except the checks in the reward system

7. Likes to swing, likes to type
8. He doesn't talk much about but says he likes to go
9. She likes the kindergarten, the singing, writing, and likes the snack and store
10. She likes it. She wants to keep going when school is out. Tells about eating, reading, typing and singing.
11. She tells of how they made the sounds of words and that she types on the typewriter and receives points for being good
12. Everyday tells what happens at school, she likes everything
13. He likes it, tells about their playing, dancing, and about the little mean boy who he sits beside
14. He talks about how he loves school and his teachers
15. Not much, will say he had a good time, brings papers home and shows his mother and toys
16. She likes to swing and play on playground
17. She likes to do her ABC's, get points to go to store
18. She tells of exercises, brings home pictures she has drawn and things she earned in the store
19. He said they painted some, played with cars, brings papers home and show his mother
20. He likes the store and bus ride (to and from school). He also likes to type

7. Do you think you child will do well in school?

1. I think she will, might be a little slow, but has good memory
2. Yes
3. Yes
4. Yes
5. Yes
6. Yes
7. Yes
8. Yes
9. Yes
10. I believe that she will
11. Yes
12. Yes, I believe so
13. Yes, the way he did in kindergarten, I think he will
14. I think he will
15. Yes
16. Yes, I think so
17. I think so
18. Yes
19. Mother is not sure
20. Yes

Why or why not?

1. She wants to go to school and likes it
2. Because she is easy to catch on and learn faster than any of my other children at her age
3. Because he is so encouraged over the kindergarten and is eager to learn

4. She likes to go to school, does not want to miss a day
5. Because he likes to go
6. Because she wants to learn
7. She learns easily
8. Because he wants to go
9. Because she likes the school
10. She has always talked about going to school
11. She seems to like school so well
12. Because she seems interested in going to kindergarten and enjoys hearing Patty read to her
13. How well he did in kindergarten
14. He is so anxious to go to school
15. He sits down and tries to learn by studying
16. She likes to go to school, will wake me up sometimes at 6:00 wanting to get ready for school
17. Because she tries to keep up with what is going on in school
18. She's happy about going to school
19. Child does not know his alphabets
20. He enjoys going to kindergarten and wants to go to school; he's bright

8. Does he have any brothers or sisters in EIP?

1. Yes (Bennie)
2. No
3. No
4. No
5. Yes, one sister
6. No
7. No
8. No
9. Yes, one brother
10. No
11. Yes, one sister and one brother
12. Yes, one sister (Patty)
13. No
14. Yes, one brother
15. No
16. No
17. No
18. No
19. Yes, one sister
20. Yes, one sister

Number of sisters and brothers

1. 9 sisters, 4 brothers
2. 3 sisters, 2 brothers
3. 2 sisters, 1 brother
4. 2 sisters, 1 brother
5. 3 sisters, 2 brothers
6. 1 sister, 1 brother
7. 3 sisters, 3 brothers

8. 2 sisters, 1 brother
9. 2 sisters, 3 brothers
10. 2 sisters
11. 3 sisters, 2 brothers
12. 3 sisters, 2 brothers
13. 5 sisters, 4 brothers
14. 2 sisters, 1 brother
15. 2 sisters, 2 brothers
16. 3 sisters, 6 brothers
17. 1 sister, 2 brothers
18. 1 sister, 2 brothers
19. 1 sister, 1 brother
20. 6 sisters, 2 brothers

9. What is family's income?

1. $56.00 per week
2. $188.00
3. $200.00 per month
4. $155.00
5. $194.00
6. $100.00 per week
7. $5,000.00 annually
8. $4,000.00 annually
9. $204.00 per month
10. $45.00 per week when he works
11. $88.00 per week
12. $650.00 to $700.00 per month
13. $67.00 per week
14. $90.00 per week
15. $75.00 to $80.00 per week
16. $60.00 per week
17. $60.00 per week
18. $149.00
19. $156.00
20. $236.00

Source?

1. Father
2. Welfare
3. Support payment - Father
4. Welfare
5. AFDC
6. Father
7. Father
8. Mother
9. Welfare
10. Father
11. Father - $60.00, Mother - $28.00
12. Father
13. Father
14. Father
15. Father
16. Father
17. Father
18. Welfare
19. Welfare - AFDC
20. Welfare