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ABSTRACT

This research project evaluated and compared three educational programs of high, medium, and low structure in family day care settings for a period of 10 months, to determine their impact on cognitive and social development in 60 children aged 2 1/2 to 4 years. The high-structure program followed the Bereiter-Engelmann approach, the medium-structure program was an adaptation of Levenstein's Verbal Interaction Program, and the low-structure situation involved friendly visitation with a child by an adult with no consistent philosophy or pedagogical program. A total of 52 children was assigned to experimental groups which differed on two main dimensions: the degree of structure and the delivery system. The two delivery systems consisted of paraprofessional teachers wither working alone with the children or cooperating with the day care mother. In addition, eight children were assigned to a family day care control condition. Results of pre- and posttesting with three cognitive measures indicated that children in each of the intervention groups showed improvements above those of the control group, but that there were no differences between intervention groups. No distinct pattern of effects was found on the sociobehavioral ratings made by teachers for any of the experimental groups. (GO)

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A COMPARISON OF THREE LEVELS OF STRUCTURE
OF EDUCATIONAL PROGRAMS IN FAMILY DAY CARE

Prepared for

The Office of Child Development,
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A COMPARISON OF THREE LEVELS OF STRUCTURE
OF EDUCATIONAL PROGRAMS IN FAMILY DAY CARE

INTRODUCTION

Problem

While there are many variations in contemporary practice for the care of preschool children outside the home in settings referred to as "day care", there seem to be two major categories. These are, respectively, "group" and "family" day care. There has been much controversy over which of the two may be superior and/or less likely to be injurious to the young child away from his home. However, even a superficial awareness of current practices suggests that both are likely to be operative for some time. Indeed, each has certain advantages over the other, depending upon attitudes of the natural parents, the age and other characteristics of the children and adults involved in the day care service, etc.

It is clear, however, that family day care is becoming increasingly popular if for no other reason than that it appears to be more economical in the cost per child. Its proponents, of course, argue that there are other justifying features. Indeed, there are few, if any, studies that have demonstrated clear superiority of one approach over the other.

Such studies in fact would be extremely difficult to conduct since for group day care the "center" would be the natural unit of observation and consequently the "sample size" is extremely small. Any day care program, whether group or family, will vary on many variables besides the simple categorization of whether they are a group or family facility. Thus, the personality of the director, staff, physical facilities, size of the center, etc., are all confounding variables in any analysis of day care effectiveness. Furthermore, the larger the center the more confounding variables that are likely to be present.

The federal government has already passed some legislation and may consider even broader and more extensive laws which, if enacted, will dramatically expand day care services for children. As Chapman and Lazar (1971) have indicated, though day care in the United States, or, for that matter, in the rest of the world, is not new, careful research in day care is.

Clearly the federal government is concerned about the impact of various types of curricula on the child's cognitive, social and emotional growth. Chapman and Lazar (1971) state: "As of yet, there have been no carefully controlled comparisons between different types of day care curricula. Future researchers might consider setting up such comparisons."

The present research and demonstration project investigated several different approaches to preschool education for children between the ages of two-and-one-half and five. Several curricular systems were implemented in family day care settings and each was evaluated and compared with the others to determine its degree of impact on the family day care child's cognitive, personal and social development.

Because no new physical plant or large professional staff is required, the cost of most family day care services is lower than group day care. However, there is some concern that the cost of providing educational programs (which would insure that family day care would be more than mere "babysitting") would change the cost advantage. Many have argued that such educational programs for very young children can be carried out more inexpensively in group day care centers which reduce the cost per contact hour. The critics of family day care have also pointed out that even when lay persons are used as teachers in educational programs for family day care, the unit cost of these activities, added to that of simply caring for a child, may be disproportionately high, thus reducing the attractiveness of family day care. Additionally, it is purported that such an increase with currently limited funds would also reduce the number of

children who might be offered whatever advantages the proponents of family day care service believe this type of service provides. Finally, it is argued that non-professionals cannot provide as effective an educational experience as can the staff of most group day care centers. Since we believe that family day care programs will continue to expand, that there are real advantages to a home setting in the preschool child's own neighborhood, and that moderately trained paraprofessionals can be effective "teachers", this study sought to examine the relative success of several educational programs of modest unit cost in such a system.

Related Research

The earlier quoted statement by Chapman and Lazar (1971) to the effect that we have no carefully controlled comparative studies of various day care curricula does not mean that we lack any information regarding the impact of various types of intervention programs on similar target populations (i.e., the disadvantaged). Since 1962 a number of research studies have attempted to determine whether various preschool programs for children aged two to five years, have measurable effects on a child's short and long-term cognitive development. (Bereiter & Englemann, 1966; Crowell & Fargo, 1967; Curtis & Berzonsky, 1967; Deutsch, 1968; DiLorenzo & Salter, 1966; Hartman,

1966; Hodges, McCandless & Spicker, 1967; Klaus & Gray, 1968; Stern, 1968; Weikart, 1967; Edwards & Stern, 1970).

The intervention and assessment programs in these studies have a number of common characteristics:

- The target populations consisted of disadvantaged children.
- The programs were carried out in a group or nursery school environment.
- Strong emphasis was placed on overcoming language deficiencies.
- An attempt was made to vary the degree of "structure" or task orientation.

In terms of the dimension of "structure" Karnes, Teska and Hodgins (1970) found that among four-year-olds in group settings, those in a highly structured instructional program showed the greatest gains in performance on the Stanford-Binet, the Illinois Test of Psycholinguistic Abilities, and the Peabody Vocabulary Test. In addition, they found that those children who participated in a "traditional" program (low on the structure continuum) showed modest gains. Children in the "community-integrated" program experienced a program similar to the "traditional" one, except that a number of less advantaged children were integrated into a middle class nursery school situation. Children in this program (also low on the structure continuum) made relatively little progress. Finally, those who participated in a

Montessori program (midway on the structure continuum) showed the least progress.

Blank and Solomon (1968) found marked gains in intelligence scores following an individualized tutorial program where the specific instructional goal was the development of language for cognition. Also, DiLorenzo and Salter (1968) and DiLorenzo, Salter and Brady (1969) reported greater success with structured programs of the Bereiter-Engelmann (1966) type than the less-structured preschool programs. On the other hand, Dickie (1968) found no significant differences among preschool children on three methods of language instruction which varied along a structure continuum.

Edwards and Stern (1970) compared the results of exposing preschool children to either one of two experimental language programs (both highly structured) to a control condition, or to a "placebo" condition (also highly structured). The four groups were evaluated on a variety of dependent measures. Generally speaking, the results favored the more highly structured experimental programs. However, the authors point out that the placebo program, which also used a highly structured format, did not produce comparable gains. This appears to point out the need to specify learning activities more precisely. One of the conclusions reached by Edwards and Stern (1970) is that, "The most

effective preschool intervention program would seem to be one which is not only highly structured and task-oriented but which also provides many opportunities for the acquisition of verbal skills through active participation and repetition." (p.35)

The above-cited studies would seem to support Weikart's (1969) thesis that children will manifest clear gains in intellectual achievement from structured programs. On the other hand, all of these programs have not met with what might be termed resounding success (Weikart, 1969). However, it would seem feasible to transfer a modified version of some or all of these programs to a family day care environment where its effectiveness may be enhanced.

Chapman and Lazar (1971) have summarized the advantages of family day care systems in the following manner:

- They tend to provide warm, responsible care.
- They are better able to serve sick children with special problems.
- The family day care homes are usually in the neighborhood where the child lives so that transportation is not necessary.
- The child is not removed from his neighborhood peer group.
- Most family day care homes have an age mix of both day care children and natural children.
- Family day care mothers are on the whole better educated than day care center staff.

On the other hand, one of the most frequently heard criticisms of family day care (either sponsored by an agency or arranged by the natural mother) is that it is largely, if not entirely, custodial. It tends to have little or no opportunity to provide for the genuine educational growth of the young child (Abt, 1971; Westinghouse, 1971). Whether, in fact, an educational component can be an inherent and useful feature of a reasonable family day care system is a major question about which this project sought to obtain reliable information.

While there is a wide variety of educational techniques available for working with very young (preschool) children, at least two approaches seem to be gaining increasing popularity, one of which requires a high degree of structure, and the other considerably less.

The Bereiter-Engelmann Program (B-E): An Approach Emphasizing a High Degree of Structure (HS)

The B-E is a highly structured, task-oriented program, the goal of which is to teach very specific skills and particularly those skills which are required for adequate school performance. Although most of the recent work using the B-E program has been carried out in group situations (Bereiter & Engelmann, 1966) the basic procedures can be carried out in a home-based instructional environment (Engelmann, 1966). Also, there is reason to believe that the method could be used on a one-to-one basis.

This program emphasizes rote learning, the development of language, the development of concepts, the proper programming of educational sequences and the use of positive reinforcement. Engelmann (1966) recommends, for instance, that the child between the ages of 18 to 36 months receive instruction in the following areas:

- Names for parts of the body
- Names of animals
- Names for letters in the alphabet
- Geometric shapes and relations
- Positional words
- Comparative words
- Counting

For example, in terms of specifying the sequence of instruction, Engelmann (1966) advises that the following procedure be used for teaching the names of objects:

- Isolate the object
- Name the object
- Require the child to repeat the name
- Require the child to point to the object
- Require the child to name the object as you point

Significant IQ gains have been demonstrated using the highly structured Engelmann approach (Engelmann, 1968).

The Verbal Interaction Program (VIP): An Approach
Emphasizing a Moderate Degree of Structure

Levenstein (1970) and Levenstein & Levenstein (1971) have presented evidence to indicate the low-income mothers can be "trained" to stimulate verbal and cognitive growth in their own children. Over a period of seven months a trained "Toy Demonstrator" made regular visits to each of 33 mother-child dyads. The Toy Demonstrator's role was to present each child with a toy chest and a total of 28 toys and books called VISM (Verbal Interaction Stimulus Materials) and to stimulate verbally-oriented play in the dyad by acting as a model for the mother. The Toy Demonstrator's actions center around the following activities:

- Giving information (labels, form, color, etc.)
- Description
- Eliciting responses from the child
- Verbalization of social interaction
- Encouraging reflection and divergence
- Engaging interest in books
- Giving positive reinforcement

In spite of this active role, the Toy Demonstrators were given the following instructions:

Treat the mother as a colleague in a joint endeavor in behalf of the child. Share your verbal stimulation techniques with her by demonstrating them in play with her child;

then draw her into the play, and take a secondary role as soon as you can while she repeats and elaborates what she has seen you do... Keep constantly in mind that the child's primary and continuing educational relationship is with his mother; do all you can to enhance that relationship without stepping into a casework role (Levenstein, 1970).

Levenstein (1970) has reported statistically significant IQ gains, as assessed by Cattell, Stanford-Binet and Peabody Picture Vocabulary Test measures, for the children who participated in the VIP when compared with two control groups of children. This technique has been used increasingly with children from two to five years of age.

Differences in Approach and Delivery Between the Highly Structured (HS) and Moderately Structured (MS) Techniques

Reviewing the "Instructions" for both of these approaches, it appears that "teachers" for each of the methods could be relatively easily prepared for their jobs if they had as little a formal educational background as a high school diploma. The proponents of the VIP might argue that the level for their program could be somewhat lower; but for purposes of the present project "teachers" in a moderately structured program somewhat similar to the VIP were recruited having achieved this minimal educational level.

Any educational system is a "package" of diverse variables and thus there are a number of differences between the HS and MS approaches. The most obvious difference is in the degree of task orientation and practice inherent in the respective approaches. The highly structured program places heavy emphasis on repetition and verbal productivity and employs little or no equipment. On the other hand, the Levenstein (1971) type of program is more modestly structured; and while it also emphasizes language development, the techniques rely more heavily on the "elicitation" of responses and "encouraging" reflection, as compared to the direct instructional HS program. Also, the Levenstein approach makes use of toys and equipment at an average cost of \$112.00 per child per year. In addition, although the contents and goals of the two programs vary somewhat, a case could be made for both of them being potentially influential with regard to the dependent variables included in the project, i.e., providing stimuli for intellectual growth for children between 2½ and 5. The crucial question was their success and unit cost relative to one another.

Another difference between these two types of systems is in how each is administered. The primary educational tasks of the highly structured system are handled

by the "teacher". There is little to suggest that the parent or guardian is to assume, even in part, the teacher role. Conversely, the proponents of the Levenstein (1971) approach argue strongly for parent training (at least in the form of modeling) with a parent observing closely what the "teacher" does and ultimately performing the educational task.

One advantage of the latter system, of course, is that the cost per hour is reduced when the natural mother (or in the present case, the day care mother) shares part of this responsibility. However, from a research control point of view, such a procedure increases the number of hours of formal intensive individual contact with the child and thus the design of the project attempted to take this into consideration.

An Approach Emphasizing Very Little Structure: Friendly Visitation (FV)

While each of these educational procedures has presented some evidence for its validity, there seems to be little evidence of attempts to control for the Hawthorne effect or indeed the presence of another adult simply instructed to play and talk to the child. Thus, for example, the National Reading Center recently developed a list of simple suggestions for parents to aid their young children

in developing earlier reading skills and to reduce the probability of reading failure. It seems plausible that a second, friendly adult concerned with the child and interacting with him in an almost completely unstructured way might in and of itself have some educational benefits. Additionally, this would provide some control in the evaluation of relatively more formally organized and pedagogically based approaches. Obviously, natural parents in conventional homes do not have structured interaction programs easily available to them, although the relatively more affluent may be in a position to purchase a greater number of "educational toys". Therefore, a third situation, approximating the less formally structured educational program called "Friendly Visitation" (FV) was incorporated into this research.

Summary of Objectives

The primary objectives can be seen from the research design which follows in the method section. Fundamentally, comparisons were made among three different degrees of structure for individually focused educational programs in family day care units. The prime target population consisted of 3-5-year-old day care children and their families. The research centered on the children's social, personal and cognitive development.

The design permitted us to examine two types of delivery system cost and attempted to incorporate two different control groups. The first, a randomly selected group of family day care units not exposed to individual educational intervention programs, and second, a group of children whose families receive public assistance but who are not in day care programs.

For exploratory purposes, a large number of comparisons were made which were not truly orthogonal in nature. We selected those comparisons which, in our judgment, were most meaningful.

METHOD

People

1. Subjects. Although the original design anticipated a total of 90 children in the six experimental treatment groups and 30 children (15 each) in two control groups, a variety of problems prevented us from reaching this goal. The major difficulties, which will be dealt with in greater detail, involved a high degree of child turnover as well as a high rate of attrition. As a result, there was a total of 52 children who participated in the experimental educational programs and eight control children. All children were between the ages of 2½ and 4 at the beginning of the program (September, 1973). Forty-three percent of the children were

white and 57% were black. In addition, 44% of the children were female and 56% male.

It should be pointed out that during the course of the program, initial test data were gathered on 252 children; however, as indicated earlier, the original target population was very unstable and complete data could not be gathered on 121 children because of the following reasons:

- a) 21 children moved out of the area
- b) 9 children dropped out of the family day care program to enter group day care centers run by Nassau County
- c) 11 children dropped out of family day care to enter private preschool programs
- d) 7 children were not retested because their mothers refused to cooperate. (These were children in the family day care control group and in the non-day care control group being cared for by baby sitters while their mothers worked. The mothers of children in the teaching program raised no objections to having their children tested. This seems to indicate a resentment on the part of some mothers to the testing of their children without any apparent benefit to the children, rather than an objection to the teaching component of the program.)
- e) 51 children were closed out of welfare assistance and were no longer using these day care services
- f) 7 children were dropped because the day care mothers refused to allow the teachers to visit their homes
- g) 15 children were dropped for a variety of miscellaneous reasons

In order to receive day care services the children must come from families who are eligible for social service assistance from the Nassau County Department of Social Services, either on the basis of economic need or family status.

2. Family Day Care Mothers. Family day care mothers in Nassau County are registered with the Department of Social Services (DSS) and the home must meet the minimum standards in terms of space, cleanliness and facilities listed in New York State Department of Social Services' booklet, "Family Day Care Homes: Rules and Regulations", in order to be licensed. The day care mothers were paid at the rate of \$5.00 per day for each child in their care full time (4 hours or more) up to a maximum of 6 children under the age of 14 (including their own). They are paid \$2.50 a child per day for part time (less than 4 hours) supervision.

The following table (Table 1) is a profile of 71 licensed family day care mothers from Nassau County (as of January 1972) and of the 32 day care mothers who participated in the present study.

Table 1

Characteristics of Family Day Care Mothers Licensed in Nassau County (N=71) as of January, 1972 and characteristics of Day Care Mothers who Participated in the Present Study (N=32)

	Licensed Family Day Care Mothers (N=71)		Family Day Care Mothers in Present Study (N=32)	
A. RACE	N	%	N	%
Black	34	(48%)	15	(47%)
White	33	(46%)	17	(53%)
Unknown	4	(6%)	--	--
B. AGE				
21-25	1	(1%)	3	(9%)
26-30	8	(11%)	5	(15%)
31-35	21	(29%)	7	(22%)
36-40	13	(18%)	10	(31%)
41-45	11	(15%)	3	(9%)
46-50	1	(1%)	2	(6%)
51-55	3	(4%)	2	(6%)
56-60	0	(0%)	0	0
61-65	9	(12%)	0	0
Over 65	0	0	0	0
Unknown	4	(6%)	0	0
C. EDUCATION				
Elem. School	0	0	0	0
Jr. High School	0	0	0	0
Some H.S.	16	(22%)	10	(31%)
H.S. Diploma	43	(60%)	19	(59%)
Some College	5	(7%)	3	(9%)
College Degree	2	(3%)	0	0
Unknown	5	(7%)	0	0

Licensed Family Day
Care Mothers (N=71)

Family Day Care Mothers
in Present Study (N=32)

D. INTEREST IN TRAINING

	Licensed Family Day Care Mothers (N=71)		Family Day Care Mothers in Present Study (N=32)	
	N	%	N	%
Yes	25	35%	13	40%
No	6	8%	5	15%
Maybe	8	11%	8	25%
Unknown	32	45%	6	20%

E. HOME EQUIPMENT

	Licensed Family Day Care Mothers (N=71)		Family Day Care Mothers in Present Study (N=32)	
	N	%	N	%
Kitchen	71	100%	32	100%
Outdoor Play Area	27	38%	16	50%
Outdoor Equipment	15	21%	8	25%
Television	71	100%	32	100%
Books	40	56%	30	94%
Toys	69	97%	31	97%

It should be noted that the 52 target children who participated in the experimental programs were cared for by a total of 32 day care mothers. Obviously, this indicates that a number of the day care mothers were caring for more than one of the children in this study.

An examination of Table 1 reveals that the two groups of day care mothers were comparable in terms of racial background. Age data indicate some minor differences. The present sample, in general, tended to be slightly younger, in that there was no day care mother over the age of 55. On the other hand, between the age range of 21 and

55, there tended to be proportionately more mothers in the 36-40 range and fewer mothers in the 31 to 35 range, as compared to the 1972 survey. Educational background appears comparable for the two groups. The present sample expressed a higher degree of interest in further training (85% indicated "yes" or "maybe" as compared to the 1972 survey (46%). Finally, the proportion of homes having outdoor play space and books was higher as compared to the 1972 survey sample. In short, the day care mothers in this study are a reasonably representative sample of the population of day care mothers licensed in Nassau County.

The teachers. Paraprofessional "teachers" were recruited from the Vocational Center for Women, the Job Development Center and through word of mouth. The Vocational Center for Women is a part of the Nassau County Bureau of Career Planning and Development, and its primary role is as a job counseling agency for women. The Job Development Center is a part of the Nassau County Commission on Human Rights, and its purpose is to aid people of minority groups to obtain jobs and training for jobs. It assists employers in hiring people from minority groups and offers counseling and aptitude testing.

The prerequisites for the teachers were that they be high school graduates, but not college graduates. In order to insure familiarity with preschool children, we insisted

that these women presently have or have had children of their own. All applicants were interviewed by the project coordinator and one of the co-principal investigators.

It was anticipated that 12 teachers would be required to work with the anticipated 90 children. However, as of August, 1973, it was clear that the full 90 children could not be recruited by September, 1973, the projected starting date. Therefore, nine teachers were hired at the initiation of the program. In addition, however, there was some teacher turnover, again due to the high rate of child turnover and relatively low compensation. Eleven teachers left the program by December, 1973 at which time the situation stabilized for the duration of the teaching program. During the period December, 1973 - June, 1974 a total of nine teachers were in the program. Two of the women were black, seven were white; and they ranged in age from the late 20s to mid-40s.

The teachers were paid \$3.00 per hour of teaching and a complicated formula was devised to pay them for their travel time and report-writing time. They were given a minimum of \$15 per week for travel and report-writing if they had five or less children. For every additional child they received an extra \$3.00 per week for travel and report-writing. During the fuel crisis they received an additional \$3.00 per week for the rising cost of fuel, and

for a few months they also received an extra \$3.00 per week for waiting time on gas lines. All people involved felt that the compensation was inadequate but were obliged to remain with the original terms of the proposal which had been developed 1½ years before the teaching program actually began.

One of the reasons that the pay was felt to be inadequate was the everchanging nature of the child population. This made it impossible to draw up contiguous geographical areas for the teachers to cover. As a result, they spent many more hours traveling than was anticipated. Also, there was no way of guaranteeing that they would teach 20 hours per week since there were fewer children to work with than had been expected. Often day care mothers would not or could not notify the teachers in time if a child was going to be absent. If a teacher made a visit and the child was not there she was paid for one hour.

The teachers were required to keep individual logs for their children and brought them to the periodic supervisory meetings. They also completed social rating scales for each child at the beginning (September 1973) and end of the program (June 1974). This seemed to be useful as a training tool for the teachers in addition to its primary purpose as a measurement of progress. It gave the untrained teachers clues as to what aspects of psycho-social development in children of this age group were worthy of observation.

4. The supervisors. Three professional psychologists served as supervisors of the paraprofessional teachers. They had the primary responsibility for overseeing the day-to-day activities involving the direct work with the children. One of the supervisors was assigned to each of the three experimental intervention programs. Each of the supervisors had a Ph.D. in psychology; two were school psychologists and the third was an associate professor of developmental psychology at a nearby university. (See Appendix I for vitae of the supervisors.) The supervisors had prime responsibility for: (a) initial instruction in the philosophy and technique of the experimental intervention programs, i.e., one of those previously labeled high, medium or low structure; (b) follow-up and "troubleshooting" various problems which arose during the course of the program.

At the outset of the program (September to October, 1973) the supervisors met weekly with their teachers. During November and December of 1973 they met bi-weekly, and from January to June, 1974, meetings were held on a monthly basis.

The supervisors required their teachers to keep written logs for each child stating the goals, methods and materials used, and comments and recommendations for each visit made with a child. They had no difficulty establishing good

rapport with the teachers under their supervision. At the meetings each teacher was given a chance to speak about her individual children. When the teachers mentioned difficulties with particular children, the supervisors were supportive and generally helpful. Toward mid-year, as the teachers gained experience, the meetings evolved into round table discussions with teachers helping each other in addition to taking guidance from the supervisors.

Experimental Design. The essential experimental design was a 3x2x2 factorial with three levels of structure of educational program (high, medium and low), two levels of "delivery" (teacher only instructing a child versus teacher and day care mother instructing a child) and two repeated measures (pre- and posttesting). Initial planning included two control groups, one involving a comparable family day care group and the other a traditional "babysitting" arrangement in the child's own home. However, again, because of unanticipated turnover and attrition problems, all of the initial planning goals could not be met and the latter control group had to be dropped. Table 2 is a schematic presentation of the experimental design as finally completed.

Table 2.

Experimental design and number of children (N) in each experimental or control condition

		Degree of Structure of Educational Program			
		High	Medium	Low	
D e l i v e r y	Teacher Only	Gp. 1 N=7	Gp. 3 N=11	Gp. 5 N=8	Family Day Care Control
	Teacher & Day Care Mother	Gp. 2 N=7	Gp. 4 N=12	Gp. 6 N=7	

In addition, the teachers were distributed as follows:

- Group 1: one teacher
- Group 2: one teacher
- Group 3: two teachers
- Group 4: two teachers
- Group 5: two teachers
- Group 6: one teacher

Educational Intervention Programs

1. Highly structured approach. The "manual" for the highly structured approach was Teaching Disadvantaged Children in the Preschool (Bereiter and Engelmann, 1966).

This particular approach views cultural/educational deprivation essentially as language deprivation. Therefore, the program stresses the development of linguistic competence. In addition, Bereiter and Engelmann (1966, p.48-49) list some 15 minimum goals to be reached by preschool children prior to entering kindergarten. In order to reach these goals the teacher is mandated to take a very active, direct instructional, task-oriented approach. In addition, a high degree of active participation is required on the part of the child. In addition, a good deal of repetition is required in order to meet the specific goals.

This approach makes little use of educational toys or games and tends to utilize pencil and paper activities, pictures of common objects, books, etc. The teachers used many demonstrations, a variety of examples, and a good deal of practice and repetition in an attempt to reach such goals as the following: a) the ability to use not statements, b) ability to handle opposites, c) ability to use class/categorical concepts (e.g., animals), d) ability to use simple if-then deductions, e) ability to name the basic colors plus white, black and brown, f) ability to count aloud

to 20; g) ability to count correctly 10 objects, h) ability to use rhyming words, i) ability to distinguish printed words from pictures.

Even though the B-E approach typically takes place with a group of five or six children, and is delivered in a fast-paced and rather dramatic manner, it was felt that the same principles (direct instruction) could be, and were, employed with smaller numbers of children, i.e., one, two or three.

2. Moderately structured approach. The teacher and supervisor guidelines used in this approach were obtained from available published materials by Levenstein, et al (Levenstein & Sunley, 1968; Levenstein, 1970; Levenstein & Levenstein, 1971; and Levenstein, Adelman, and Kochman, 1971). According to Levenstein et al (1971, p. 75) the program "is based on the assumption that cognitive enrichment for low-income and other educationally disadvantaged preschoolers should occur with early speech development and should be embedded in the child's relationships with beloved family figures, especially the mother. . . . As the major component of cognitive growth, the program fosters conceptualization, closely linked with language skills, through the home demonstration of a model for verbal interaction between child and mother around perceptual-motor experience with self-motivating objects". The major materials

used as the vehicle for cognitive and language stimulation included some 24 toys and 15 books throughout the course of the intervention period. We used the toys and books that Levenstein et al (1971) found useful. A listing of these may be found in Appendix II. The toys originally were chosen because of their capacity to promote verbal interaction, their distinctive perceptual components, their ability to facilitate both gross and fine motor expression, also their potential for the child's being able to use the toy in a conceptual problem-solving fashion.

In terms of actual procedures, the teacher brought a different toy or book to the target child (children) on a weekly basis throughout the course of the program. After rapport was established, the "lesson" centered around three general areas if a toy was being used: (1) naming/labeling of colors, shapes, sizes, texture, relationships, number, categories; (2) description of actions in terms of matching, fitting together and making sounds; (3) reminding the child to think about what he does in terms of giving attention, making choices, having self-control, remembering related experiences, pretending and performing acts in the proper sequence. In each case, the teacher took the lead and then encouraged the child to act, verbalize, etc.

If a book was being used, the following guide was used by the teacher:

- a. Invite the child to look and listen.
- b. Show and read the title page.
- c. Show and describe how to turn the pages and how to treat the book.
- d. Read in a clear, easy voice.
- e. Stop at illustrations and invite the child to point out colors, shapes and sizes, number; texture, relationships, categories.
- f. Encourage the child to join in when familiar words are read.

The guidelines for the manner in which toys and books were used were taken from the Manual for Replication of the Mother-Child Home Program (Levenstein et al, 1971).

At this point, it should be pointed out that at least two major modifications of the Levenstein approach were made vis-a-vis the present project. The first concerns the use of the child's natural mother. Levenstein et al argue strongly that the program be used with the natural mother and that the teacher's major function is to demonstrate the approach with the goal of having the major interaction take place between the child and his/her natural mother. This was not the case in the present study due to the fact that the intervention procedures were being carried out in a family day care setting. A second major modification concerns the fact that the teachers in the present project were not trained by the Levenstein et al staff. As

indicated earlier, the materials, techniques, philosophy, etc. were obtained from available published material.

3. Loosely structured approach. By its very nature, this approach was difficult to operationalize or to specify. The major objective was to have the teachers interact with the children in a warm, friendly and supportive manner without the use of a formal, consistent educational philosophy, series of objectives or technique. However, each teacher was given a total budget of \$15.00 per child to spend as she saw fit. The teachers were encouraged to think in terms of consumable items, such as crayons, paper, pencils, etc.

To the extent possible, the supervisors' role was viewed as being primarily "non-directive" in nature. The teachers were encouraged to come up with their own goals for the children as well as the methods and techniques which might be used to reach the goals. In this instance, it appeared that much of their thinking was determined by what they did with their own children when their children were between 2½ and 4. After the teachers began to formulate their own goals and techniques, the supervisor played the role of resource person. It should also be pointed out that since the supervisory sessions were held in a group, there is no doubt that the teachers exerted some mutual influence on one another in terms of what was being done with the children. The most active role played by the

supervisor consisted of his supplying normative developmental information on 2½ to 4-year-old children so that the teachers would have some framework within which to plan and operate. In summary, the loosely structured approach consisted of a variety of goals, methods, and techniques with little in the way of formal materials or a consistent educational perspective.

The "Delivery" Systems

As will be recalled, a second aspect of the present study dealt with the manner in which each of the educational programs was "delivered" to the children. The present program involved two types of delivery systems: one in which only the paraprofessional teacher worked with the target child (children) and a second-in which the teacher and the day care mother worked with the target child/children. In the teacher only condition the teacher worked with the child for two hours per week (one hour on each of two different days) throughout the course of the program. In the teacher plus day care mother condition the teacher also worked with the target child/children for two hours per week. In addition, however, the day care mother was requested to observe the interaction of the child and teacher, and then to work with the target child/children for an additional two hours during the course of the week. The day care mother was requested to

perform the same activities with the child/children which had been "modeled" by the teacher. However, at least two problems with this manipulation should be noted. There was little in the way of an incentive (e.g., monetary) which could be offered to the day care mother in exchange for providing this type of follow-up, primarily because the Department of Social Services foresaw problems arising with those day care mothers who were involved in the teacher only condition. However, even if it had been possible to provide an incentive, it would have been very difficult to oversee the day care mothers, primarily because of time, either in terms of DSS staff or project staff.

Length of Intervention Period

The educational intervention program was in effect for a period of ten months (September, 1973-June, 1974). With the original goal of having two hours of direct teacher instruction per week, it would have been theoretically possible to see each child for a total of approximately 80 hours (8 hours per month x 10 months). However, when one considers vacations such as Thanksgiving, Christmas, Chanukah, Easter, Passover, etc., 65 hours of contact is a more realistic estimate. In terms of actual teacher contact time, the mean number of hours spent was 49.6. There was, however, a considerable range, with a low of 21 and a high of 70. In terms of the various educational intervention

programs, the children in the highly structured group averaged 52 hours of contact, the children in the moderately structured condition averaged 51 hours of contact, and the children in the loosely structured group averaged 46 hours of contact. A problem in this respect centered on some of the children's not showing up at the day care home on a regular basis; however, this will be discussed in more detail in the discussion section.

Variables Investigated

The major dependent variables consisted of several cognitive and social behavioral measures. It should be pointed out that these measures were obtained near the beginning of the project (October, 1973) and at the close of the educational part of the program (Summer, 1974).

The Cognitive Measures

1. The Peabody Picture Vocabulary Test (PPVT). The PPVT (Dunn, 1965) is a non-verbal, multiple-choice test that was designed to evaluate children between the ages of 2½ and 18 years who can indicate "Yes" or "No" in some manner. The test was designed to provide an estimate of an individual's verbal intelligence through measuring hearing vocabulary or receptive knowledge of vocabulary. Raw scores can be converted to a mental age, IQ and percentiles. Alternate forms are available. The instrument was originally standardized on 4012 white SS, aged 2½ to 18.

The PPVT manual reports alternate form reliabilities ranging from .67 at year 6-0 to .84 at ages 17-0 and 18-0. The standard errors of measurement in IQ points range from 6.00 at ages 17-0 and 18-0 to 8.61 at age 6-0 years. Fourteen studies (listed in the Appendix of the manual) report alternate form reliabilities from .37 to .97, with a median of .77. Test-retest studies report coefficients ranging from .28 to .97, with a median of .73, with retest intervals ranging from 4 weeks to 2 years.

2. The Preschool Inventory (PSI). The PSI (Caldwell, 1970) was designed as a brief assessment and screening procedure for individual use with children in the age range of 3 to 6 years. The 64-item inventory was devised specifically for use in connection with Project Head Start both for deprivation-associated deficits and for program evaluation. As such, the criteria followed in its development were that: (a) it samples skills children need and are implicitly assumed to possess in kindergarten and early grades; (b) it reflects culturally based deficits (as opposed to being "culture-fair"); (c) it be sensitive, rather than resistant, to change so that it reflects acquisition of skills; and (d) it could be quickly administered with reasonable accuracy.

Standardization to date has been mainly with low SES groups. Miller and Dyer (1970) reported a six-month test-retest stability coefficient of .79. Correlations with the

Stanford-Binet range from .39 for 3-year-olds to .65 for 5-year-olds, with .44 being the correlation for the entire sample (N=1476). Caldwell (1970, p.23) indicated that, "Since even among 5-year-olds (where the correlation between these two measures is the greatest) only 42 percent of the variance in the scores is accounted for by this relationship, it is obvious that the Inventory is measuring something in addition to general intelligence."

The PSI appears to tap a variety of preschool skills including knowledge of self, body parts, knowledge of general environment, basic number facts, comparative concepts, ordinal concepts, prepositional concepts, colors, form recognition and basic copying skills.

3. The Basic Concept Inventory (BCI). The BCI (Engelmann, 1967) is a checklist of basic concepts that are involved in new learning situations, particularly as they pertain to first grade. Engelmann (1967, p.5) indicates that the BCI is not a complete checklist in that it does not include knowledge of colors, ability to count, etc., but concentrates on skills "that are perhaps more basic, less likely to be taught, and less likely to be noticed and diagnosed by the teacher". It is primarily intended for culturally disadvantaged preschool and kindergarten children, slow learners, emotionally disturbed children, and mentally retarded children.

Engelmann indicates that the BCI consists of an attempt to construct a criterion-referenced test as compared to a norm-referenced test. According to Engelmann (1967, p. 5) "the motivation behind items on a criterion-referenced measure is not to spread the distribution (of scores) but to evaluate the instruction the child has received on specific, relevant skills. Since the skills tested are specific and relevant, we can see by examining a child's test performance precisely where his instruction has either failed or succeeded him in teaching him what he should know". In this sense, the BCI differs from the PPVT and the PSI, both of which are norm-referenced measures.

The BCI consists of three parts termed: (1) Basic Concepts, (2) Statement Repetition and Comprehension, and (3) Pattern Awareness.

Engelmann (1967, p.7) states that, "The tasks in Part One are designed to test the child's ability to handle different types of selection criteria:

- a) Uncomplicated selection criteria such as an object name: Find the boy.
- b) Plurals: Find the balls that are black.
- c) Not criteria: Find the balls that are not white.
- d) Compound selection criteria: Find the ball that is big and black. (Also the not variation: Find the one that does not talk and does not bark.)
- e) Full statements as criteria for selection: Find the right picture: The man is going to chop down the tree.

- f) Selection criteria that do not provide enough information to identify a particular object. For example, the child is shown an illustration of three boxes and is told, "There is a ball in one of these boxes. The ball is not in this box (pointing to the box at left). Do you know where the ball is? Don't guess."

In terms of the second part, Engelmann (1967, p. 7) indicates that, "Part Two tests the child's ability to repeat statements and to answer the questions that are implied by these statements. For example: A boy is not walking when he is running. What is a boy not doing when he is running? The rationale behind Part Two items is that statements that are used in everyday language and in the classroom should be familiar to the child. The child should be able to understand what they mean and be able to repeat them. If he fails in either area, his familiarity with these statements is inadequate. If he has difficulty repeating statements, he is handicapped in situations that demand him to repeat and apply statements."

In terms of the area of Pattern Awareness, Engelmann (1967, p. 8) says that, "Part Three tests the child's understanding of the kind of patterning on which analogies are based. For example, the child is presented with the sounds m--lk and is tested to see if he can identify them as the word milk. The word and the sound pattern are analagous. Both depend upon a relationship of the parts. The only difference is that the parts are telescoped in the word

milk. Two other patterning tasks are presented in Part Three, one designed to see if the child can note the sequence of two events, and the other to see whether the child can figure out the pattern used to expand a digit series. The child is first asked to repeat a digit series - 7,4, for example. Then he is asked to repeat the analogous series, 7-7, 4-4, and so on, through 7-7-7-7, 4-4-4-4. The digits in the expanded series are not random. They are governed by an expansion rule. The child who perceives this rule will more probably be able to repeat the digits than the child who does not. Conversely, the child who does not is possibly unaware of the rule."

The Social-Behavioral Measures

1. The Teacher's Rating Scale. This scale (Rubin, 1962) consists, as the title indicates, of a series of scales designed to assess social-behavioral characteristics of children in the age range kindergarten through second grade. (See Appendix III). The original scale consisted of 79 items, each of which was a separate scale. Interrater reliability coefficients for the 79 scales ranged from .26-.94. Two thirds of the coefficients were above .75.

The version used in the present project was revised by Rubin in 1967 and contained 55 items. We assume that those scales (of the original 79) which demonstrated lowered reliabilities were deleted. For the purposes of the

present study, we deleted several additional items, primarily those which were more relevant to classroom (group) behavior and those which were not appropriate for children in the 3-5 age range. Therefore, a total of 35 behaviors were rated.

Each item is composed of a 9-point scale, where the first, fifth and ninth reference points are described, and in some cases also the third and seventh points. The rater is instructed that he may use points 2, 4, 6 or 8 if he feels the need to do so.

The original study design called for periodic observations and ratings on the part of the Department of Social Services caseworker assigned to the day care child. It soon became apparent that the caseworkers were not able to make frequent enough or long enough visits to be able to carry out these systematic observations. Therefore, the teachers were asked to complete the rating scales twice, once at the beginning of the program (October, 1973) and once at the end (Summer, 1974). This obviously was less desirable than the original plan, but was the best that could be done under the circumstances.

Demographic and Background Variables

In addition to the major dependent measures, information was obtained on the characteristics of the target child, the child's biological parents and home, and the child's day care mother and home.

Essentially these questions tried to get a picture of the social, educational and occupational background, and the composition of the day care child's family and caretaker as well as the physical environment of the "natural" home and the day care home. The interview schedule (a copy of which is attached as Appendix IV) was completed by the Department of Social Services caseworker assigned to the child on the basis of existing documents, interviews with the relevant persons, or systematic observations of the home setting. These data are not relevant to the present study and hence not presented below. However, they may be useful to any further attempt to try to understand the characteristics of children who do or do not improve in different educational environments.

RESULTS AND DISCUSSION

Cognitive Measures

1. Peabody Picture Vocabulary Test (PPVT). The data in Table 3 show the mean PPVT IQ scores for each experimental group as well as for pre- and posttesting.

Table 3: Mean PPVT IQ scores for the various experimental conditions.

		Degree of Structure						Raw Mean
		High		Medium		Low		
		Pre	Post	Pre	Post	Pre	Post	
D e l i v e r y	Teacher Only	94	93	87	102	99	97	95
	Teacher + DCM	76	89	94	99	99	107	94
	Pre and Post \bar{X}	85	91	91	100	99	102	
	Total Cell \bar{X} s	88		96		100		

A 3x2x2 ANOVA yielded one significant main effect which involved pre- vs. post-teaching ($F=5.79$, $df=1,42$ $p<.05$). In this case, the mean pretest PPVT IQ was 90 and the mean posttest IQ was 98. Thus, irrespective of educational programs or delivery systems, the children's IQ scores on this test improve. There were no other significant main effects or interactions.

The fact that there were no significant interactions indicates that neither the educational structure variable nor the delivery system acted to bring about differential changes over time with respect to PPVT IQ, i.e., on the average all children improved significantly.

However, another manner in which the data might be viewed is in terms of expected vs. obtained rate of mental growth. For example, Table 4 represents the mean mental

age scores for the six educational treatments, including pre- and posttesting.

Table 4: Mean PPVT Scores for the experimental educational conditions.

		Degree of Structure						Raw Mean
		High		Medium		Low		
		Pre	Post	Pre	Post	Pre	Post	
D e l i v e r y	Teacher Only	31	40	29	43	30	39	35
	Teacher + DCM	25	32	32	49	39	53	38
	Pre and Post \bar{X} s	28	36	30	46	34	46	
	Total Cell \bar{X} s	32		38		34		

In this instance there was also a significant main effect for pre- vs. posttesting ($F=52.46$, $df=1,41$, $p<.05$). There were no other significant main effects or interactions. In this case, the overall main pretest M.A. was 31 months and the overall posttest M.A. was 42.6 months, indicating an average increase of 11.6 months. If one considers the IQ to be a predictor of rate of mental growth, then one might begin to make comparisons between predicted and obtained rates of mental growth. For example, the mean pretest IQ for the present sample was found to be 90. If the mean had been 100, one would expect 12 months of mental growth during a 10-month

chronological period (the duration of the present educational intervention program). On the other hand, the fact that the obtained mean pretest IQ was 90 would lead one to expect an average gain of 10.8 months of mental growth over a 12-month period, or a gain of approximately 9 months of mental growth during a 10-month period. The Above calculations assume that no particular educational intervention occurred during the 10- or 12-month periods. Therefore, the fact that the present program found an average gain of 11.6 months compared to an expected gain of 9 months (assuming no intervention) seems to indicate that all of the experimental educational programs, irrespective of degree of structure, yielded significant gains in the children's hearing vocabulary or receptive knowledge of vocabulary.

In comparing the present results with those of other investigations which have utilized the PPVT, a number of things should be considered. The first point is that present pretest mean IQ of 90 tends to be somewhat higher than those found in other investigations. For example, Levenstein (1970) reported a pretest mean IQ of 76.8 for a sample of 29 two and three-year-olds. After seven months of intervention the mean PPVT IQ was found to be 89.0. Additionally, Karnes, Teska and Hodgins (1970) obtained a mean PPVT IQ of 82.6 for 92 children who were then

assigned to one of four types of educational programs. After 7 to 8 months of instruction in one of the educational programs (two hours and 15 minutes per day), PPVT IQ gains ranged from 4.0 points (83.3 to 87.3) in one group, to 12.4 points in another group (80.2 to 92.6). In still a third (experimental) group, a pre-posttest difference of 10.3 points was obtained (85.8 to 96.1).

In addition, Edwards and Stern (1970) utilized the PPVT as one of many dependent measures in a study involving a comparative analysis of three intervention programs with disadvantaged preschool children. In this instance, the mean pretest PPVT IQ was 75.4. After 24 weeks of instruction (15 minutes per day, 4 days per week), the adjusted posttest means for the various instructional programs were as follows: 95.4, 89.8, and 86.4.

As indicated earlier, children in the previously cited studies routinely obtained lower pretest PPVT IQs; therefore the children who participated in the present study may not have been comparable prior to intervention. A second and related point concerns the fact that the results of these several studies have demonstrated rather dramatic absolute gains, e.g., 12 to 20 IQ points. However, the fact that the children in these studies began at a lower level, coupled with the possibility of a "regression effect" might have acted to artificially inflate

the posttest scores. It should also be noted that in none of the studies cited above was the mean posttest scores comparable to the one found in the present study (mean PPVT IQ=98). Therefore, it is suggested that in spite of the fact that the children in the present study began at a relatively high level ($\bar{X}=90$) (which might have acted to produce a "ceiling effect") statistically significant IQ gains were observed. This would seem to indicate that all of the present intervention programs were successful in increasing performance on the PPVT and that we are observing more than a simply maturational effect.

Several other studies have reported that children from ethnic minority groups make appreciable gains on the PPVT (Howard & Plant, 1967; Klaus & Gray, 1968; Milgram, 1971) in preschool programs such as Head Start. Milgram has suggested that the PPVT "is dependent on consistent attention and control over competing responses. Its multiple choice format may obscure the loss of attentional set to a greater degree than the relatively more open-ended questions of (e.g.) the Binet (p 325)." In addition, Milgram offered several hypotheses to explain the greater gains typically made on the PPVT compared to an instrument such as the Binet. It may be that: (1) "with increasing age children are increasingly able to maintain

a constant set; (2) they become more familiar with the verbal items of the PPVT; (3) the practice effect is larger for the PPVT than for the Binet. It would seem that further research is required to evaluate the above hypotheses to determine which best accounts for the rise in PPVT IQs as a result of an intense preschool experience.

2. Preschool Inventory. As was the case with the PPVT, a 3x2x2 ANOVA revealed a main effect for pre- vs. posttesting ($F=159.89$, $df=1,38$, $p < .01$). No other main effects or interactions were found to be statistically significant. Table 5 presents the pre- and posttest mean scores for the PSI for the various experimental conditions.

Table 5: Mean PSI scores for the various experimental conditions.

Degree of Structure

	High		Medium		* Low		Raw Mean
	Pre	Post	Pre	Post	Pre	Post	
Teacher Only	27.2	42.5	26.4	38.7	18.7	44.2	33.0
Teacher + DCM	18.8	42.8	26.0	49.0	31.4	49.6	36.3
Pre and Post Means	23.0	42.7	26.2	43.9	25.1	46.9	
Cell Means	32.9		35.1		36.0		

Total Pretest Mean = 24.8
 Total Posttest Mean = 44.5

The question arises as to whether the significant mean increase in scores was simply a result of maturation, since the PSI is essentially an age-normed instrument. At this point there would appear to be at least two ways of viewing the data to determine whether the observed changes reflect maturation only, or are a result of the educational intervention programs: (1) compare the observed changes with the results of other preschool programs which have utilized the PSI as a dependent measure.

In terms of the first alternative, it would seem that the observed mean gain of 19.7 points is greater than might be expected by maturation alone. For example, Caldwell (1970) provides mean scores for the various age groups utilized in the standardization of the PSI. A brief reproduction of the norms is as follows (Preschool Inventory, Revised Edition 1970, Handbook, p 21):

Age Group	Mean (Raw Score)
3-0 to 3-11	25.6
4-0 to 4-5	30.0
4-6 to 4-11	33.9
5-0 to 5-5	38.4
5-6 to 6-5	42.4

The mean age of the children in the present study was 3 years and 6 months at the beginning of the project, and the mean pre-test PSI score was 24.8. It would appear, therefore, that the children in the present study were comparable to those in the PSI standardization sample. However, at posttesting, when the mean age was 4 years

3 months, the mean PSI score was 44.5, which is comparable to the 5-year, 6 months to 6 years, 5 months age group in the PSI standardization sample. Therefore, it appears that the children in the present study acquired a significantly greater number of the skills tapped by the PSI as a result of the various experimental programs than might be expected by maturation alone, if the PSI norms are used as a basis for comparison.

As indicated earlier, however, another manner of evaluating the present results is to compare them with other preschool intervention programs which have utilized the PSI. For example, Edwards and Stern (1970) used the PSI as one dependent measure in an investigation of the comparative effect of three different preschool intervention programs. At the start of the program the mean chronological age of their children was 51.6 months and the intervention period was 6 months; however, actual total instructional time came to about 24 hours. The mean age of the children at post-testing was 58.5 months. Pretest means were not reported; however, adjusted posttest means were found to be 47.4 and 42.4 for the two experimental groups, respectively; 40.7 for a placebo group, and 36.8 for a no-treatment control group. In attempting to compare the results of Edwards & Stern (1970) with those of the present study, a number of factors must be considered. These differences are outlined below.

	<u>Present Study</u>	<u>Edwards & Stern (1970)</u>
Mean C.A. at pretest	41.6	51.6
Mean C.A. at posttest	50.6	58.5
Duration of intervention	9 months	6 months
Mean hours of instruction	49.6	23.8
Mean PSI posttest	44.5	47.4 (exp.)
		42.3 (exp.)
		40.7 (Placebo)
		36.8 (Control)

It would appear, then, that younger children, being worked with over a longer period of time and on a more intense basis, score almost as well as older children who are worked with on a less intense basis for a shorter period of time. The fact that the posttest PSI mean found in the present study is comparable to that of older children who have also received experimental intervention would seem to indicate that the gains observed in the present study are essentially a result of maturation. The present results might also be compared with those of Miller & Dyer (1970) who compared 4 types of Head Start curricula and their relative impact on a number of different dependent measures, the PSI being one of them.

In the Miller & Dyer study the median age of the children was 51.9 months and the pre- posttesting interval was 6 months. Again, it might be instructive to compare the Miller & Dyer results with those of the present study in tabular form:

	Present Study	Miller & Dyer (1970)
Mean C.A. at pretest	41.6	51.9 (median)
Mean C.A. at posttest	50.6	57.9 (median)
Duration of intervention	9 mos.	6 mos.
Mean hours of instruction	49.6	660*
Mean PSI pretest	24.8	26.6
Mean posttest	44.5	39.1 (exp.)
		40.9 (exp.)
		37.6 (exp.)
		35.9 (exp.)
		33.2 (control)

Here again, the children in the present study were younger at the beginning of the program, received instruction over a longer period of time (with fewer instructional hours), and yet appeared to perform somewhat better at the time of posttesting. It might also be pointed out that pretest IQs for the children seem comparable, so that some sort of general ability factor would not seem to be greatly influencing the results. The mean PPVT pretest IQ was 90.59 and the mean Stanford-Binet pretest IQ was 91.8 for the Miller & Dyer (1970) children. The PPVT and Stanford-Binet obviously are not directly comparable; however, the pretest figures from both sets of data seem to indicate that the children in the present study and those in the Miller & Dyer study were functioning at the lower end of the average range of intelligence prior to intervention. Parenthetically, it might be noted that Stanford-Binet IQ

*This figure was based upon the following: 6 mos. of intervention, with 5.5 hours of instruction for 5 days per week.

gains ranged from .79 IQ points (control group) to 6.27 IQ points for one of the experimental groups. The mean PPVT IQ gain for all children in the present study (6.2 IQ points) seems comparable to the greatest observed gain of 6.3 points in one of the Miller & Dyer experimental groups.

In summary, it would appear that the pre- post gain observed in the present study was not simply a function of maturation, whether one compares the gains with the PSI norms or with the results of related studies.

3. Basic Concept Inventory (BCI). A 3x2x2 ANOVA completed on the BCI total score revealed a significant effect for pre- vs. posttesting ($F=52.58$, $df=1,42$; $p<.01$). No other main effects or interactions were found to be statistically significant. Table 6 presents the pre- and posttest mean scores for the BCI total scores for the various experimental conditions.

Table 6: Pre- and posttest mean total BCI scores for the various experimental conditions.

	High		Medium		Low		Raw Mean
	Pre	Post	Pre	Post	Pre	Post	
Teacher Only	52.0	42.5	73.3	47.7	68.0	28.0	52.1
Teacher and DCM	79.6	42.2	62.8	27.2	61.6	25.6	49.8
Pre and Post Means	65.8	42.4	68.1	37.5	64.8	26.8	
Cell Means	54.1		52.8		45.8		

Total pre-test Mean = 66.2
 Total Post-test Mean = 36.2

It should be pointed out that the BCI is scored for errors; therefore, the lower the score the better the performance. In this case, then, the mean posttest score of 36.2 indicates significant improvement over the mean pre-test score of 66.2, for all experimental groups.

It becomes more difficult to interpret this improved performance, partly because the BCI is a criterion-referenced test and therefore does not provide age norms. Therefore it is possible that the children gained in competence primarily as a result of maturation. In terms of raw score improvement it should be pointed out that the total possible number of errors which could be scored is 145. Therefore, in terms of mastery of the items, the pre-test mean indicates that the children were able to perform approximately half the items on the BCI prior to intervention (54.4%). At the time of posttesting they had mastered approximately 75% of the items. The BCI manual indicates that the instrument is "primarily intended for culturally disadvantaged preschool and kindergarten children, slow learners, emotionally disturbed and mentally retarded children". The fact that the preschool children in the present study were approximately 3½ years of age at the start of the program and reached 75% mastery at the time of posttesting would seem to indicate that something other than maturation was occurring.

One other comparison seems germane at this point, i.e., the Head Start comparative study by Miller & Dyer (1970). In addition to the variety of pre- and post measures, several instruments were administered only at the close of the program, the BCI being one of them. The information from the present study and that of Miller and Dyer is summarized below:

	<u>Present Study</u>	<u>Miller & Dyer (1970)</u>
Age at posttesting (mos.)	50.6 (mean)	57.9 (median)
Duration of intervention	9 months	6 months
Mean hours of instruction	49.6	650
Mean BCI posttest	36.2	36.17 (exp.) 37.79 (exp.) 35.00 (exp.) 44.54 (exp.)

Therefore, it would seem that the mean BCI posttest score compares favorably with those observed by Miller & Dyer, even when one considers differences in C.A., duration of program, amount of instructional time, etc.

3a. Basic Concept Inventory (BCI) Part One: Basic Concepts. As indicated in the Method section, the BCI consists of essentially three parts, each of which purports to tap a skill necessary for later school success. Therefore, further analyses were carried out on the various sub-parts of the BCI.

The BCI manual indicates that in Part One the child is asked to follow basic instructions (e.g., "Find the man", in a picture) and should understand the "content"

words that are used in the instructions. The BCI Manual (p.7) also indicates that "the tasks in Part One also test the child's understanding of words that describe relatively common objects and properties such as man, girl, ball, he, she, it, they, big, white, on, between, next to".

As with the total BCI, Part One employs a "negative" scoring system with a higher score indicating poorer performance. On Part One, then, the total number of possible incorrect responses is 42.

A 3x2x2 ANOVA performed on the BCI Part One data revealed a significant main effect for pre- vs. posttesting ($F=22.03$, $df=1,30$, $p < .01$), and a significant between-groups interaction involving degree of educational structure and type of delivery system ($F=4.34$, $df=2,30$, $p < .05$). Table 7 presents the pre- and posttest mean scores for the BCI Part One for the various experimental conditions.

Table 7: Pre- and posttest mean scores for BCI Part One for the various experimental conditions.

		Degree of Structure						Raw Mean
		High		Medium		Low		
		Pre	Post	Pre	Post	Pre	Post	
Pre and Post Means	Teacher Only	18.2	17.00	27.9	17.5	23.7	13.3	19.6
	Teacher and DCM	31.4	18.6	16.7	14.4	19.5	11.8	X
	Cell Means	24.8	17.8	22.3	15.9	21.6	12.5	18.7
		21.3		19.1		17.1		

Total pre-test Mean = 22.9
 Total posttest Mean = 15.4

If the pre-post differences are examined in terms of degree of mastery of the skills involved in Part One, Table 7 indicates that all averaged 23/42 incorrect responses prior to intervention; another way of viewing their performance is that they were competent on 45.3% of the items. The mean posttest score of 15.4/42 indicates that their degree of mastery of the items rose to 63.4%. The significant delivery system x educational structure interaction seems to be accounted for by the fact that the children in some of the experimental conditions obtained very low pre-test scores and then made rather large gains (see Table 8).

Table 8: BCI Part One: Pre- post and gain scores for the various experimental conditions.

<u>Experimental Condition</u>	<u>Pre</u>	<u>Post</u>	<u>Gain</u>
Teacher Only -- Hi Structure	18.2	17.0	+1.2
Teacher Only - Med. Structure	27.9	17.5	+10.4
Teacher Only - Lo Structure	23.7	13.3	+10.4
Teacher + DCM - Hi Structure	31.4	18.6	+12.8
Teacher + DCM - Med. Structure	16.7	14.4	+2.3
Teacher + DCM - Lo Structure	19.5	11.8	+7.7

Table 7 indicates that the groups in which children started with relatively low scores (indicating better performance) gained relatively little, while those children who began the program with higher scores (indicating

poorer performance) gained relatively more. That is, there seemed to be a differential impact of the various programs depending on the pretest score, and the effect of the program appeared to be one of making the children more "homogeneous", i.e., there is relatively little difference among the posttest scores. This hypothesis of differential impact is borne out by the nearly significant triple interaction of structure x Delivery System x Pre- vs. Posttesting ($F=3.43$, $df=2,30$ $p<.10$).

3b. BCI Part Two: Statement Repetition. One section of Part Two of the BCI tests the child's ability to repeat statements. Engelmann (1967) indicates that "Statements that are used in everyday language and in the classroom should be familiar to the child . . . If he has difficulty repeating statements, he is handicapped in situations that demand him to repeat and apply statements." (p7)

Again, a negative scoring system is used, with a total of 72 possible errors. The results of a $3 \times 2 \times 2$ ANOVA indicated a significant main effect for pre- vs. post-testing ($F=42.32$, $p<.01$). No other main effects or interactions were significant. Table 9 presents the mean scores for pre- and posttesting for the various experimental conditions.

Table 9: Pre- and post-mean scores for BCI Part Two: Statement Repetition for the various experimental conditions

		Degree of Structure						Raw Mean
		High		Medium		Low		
		Pre	Post	Pre	Post	Pre	Post	
D e l i s t r i b u t e d y	Teacher Only	9.7	8.0	22.6	11.7	21.5	5.0	13.1
	Teacher + DCM	26.4	7.8	22.4	5.2	22.8	6.6	15.2
	Pre and Post Means	18.1	8.8	22.5	8.5	22.2	5.8	
	Cell Means	13.5		15.5		14.0		
		Total Pre-test Mean = 20.9						
		Total Posttest Mean = 7.7						

In terms of mastery, it would appear that most of the children were relatively well-skilled in this area. prior to intervention, the mean pre-test score indicating 70.9% mastery of the items. At the time of posttesting the average mastery level was 89.3%.

3c. BCI Part Two: Comprehension. A second aspect of Part Two concerns the child's ability to answer questions implied by certain statements. Engelmann (1967) indicates that if the child "cannot answer the questions that are implied by the statements, he doesn't fully understand the kind of declaration the statement makes about reality." (p.8)

In terms of the scoring system, there are 16 possible errors in this section. The results of a 3x2x2 ANOVA on

the error scores revealed a significant main effect for pre- vs. posttesting ($F=21.83, p < .01$) with no other significant main effects or interactions. Table 10 presents the pre- and posttest mean scores for the BCI Part Two: Questions for the various experimental conditions.

Table 10: Pre- and Posttest mean scores for the BCI Part Two: Questions for the various experimental conditions

		Degree of Structure						Raw Mean
		High		Medium		Low		
		Pre	Post	Pre	Post	Pre	Post	
Teacher Only	9.0	6.3	11.1	8.7	12.0	3.5	8.4	
Teacher + DCM	11.8	6.4	9.2	4.5	8.6	3.4	7.3	
Pre and Post-test Means	10.4	6.4	10.2	6.6	10.3	3.5		
Cell Means	8.5		8.4		6.9			

Total Pretest Mean = 10.3
 Total Posttest Mean = 5.5

Here again, if the results are viewed in terms of mastery, the average child was able to satisfactorily answer 35.6% of the questions on Part Two prior to intervention. This would seem to indicate that this was a difficult task for these children. Subsequent to intervention they were able to satisfactorily respond to 65.6% of the questions. Although this would not be viewed as acceptable performance on most criterion-referenced tests, it should be remembered that the children in the sample were relatively young.

3d. BCI Part Three: Pattern Awareness. Part Three of the BCI tests the child's understanding of the kind of patterning on which analogies are based, and consists of essentially three types of patterning tasks. For example, the child is presented with the sounds "m--ilk" and is tested to see if he can identify them as the word "milk". Also, the child is asked to repeat a digit series: 7,4. Then he is asked to repeat the analagous series, 7-7,4-4 through 7-7-7-7, 4-4-4-4. Engelmann (1967) indicates that "the child who perceives the rule will more probably be able to repeat the digits than the child who does not." (p.8)

In terms of the negative scoring used there are a total of 15 possible incorrect responses. Table 11 presents the pre- and posttest means for the BCI Part Three for the various experimental conditions.

Table 11: Pre- and posttest mean scores for the BCI Part Three for the various experimental conditions

	Degree of Structure						Raw Mean
	High		Medium		Low		
	Pre	Post	Pre	Post	Pre	Post	
Teacher Only	9.0	6.3	11.1	8.7	12.0	3.5	8.4
Teacher + DCM	11.8	6.4	9.2	4.5	8.6	3.4	7.3
Pre and Post Means	10.4	6.4	10.2	6.6	10.3	3.5	
Cell Means	8.4		8.4		6.9		

Total Pretest Mean = 10.2
 Total Posttest Mean = 5.5

The results of a 3x2x2 ANOVA performed on the data revealed a significant main effect for pre- vs. posttesting ($F=21.83$, $p < .01$), with no other significant main effects or interactions.

Again, if the data are viewed in terms of mastery, the children were able to perform adequately on 32% of the items prior to intervention, and on 63.4% subsequent to intervention.

4. Summary. Analyses of variance reveal pre-post main effects on each of the cognitive measures used in this study which show significant improvement on the part of the children. There is only one significant interaction effect: on BCI Part One, there is a significant delivery system x educational structure interaction. This finding is apparently a result of initial differences in scores on the part of several of the groups, rather than the two variables seemingly involved.

Comparison of Experimental Intervention Groups with Family Day Care Control Group on the Cognitive Measures

The foregoing analyses which were concerned with the six experimental groups indicated relatively few significant main effects, with the exception of the large number of overall pre-post comparisons. The significant main effects for pre- vs. posttesting compare favorably with the results from similar studies, and the gains observed, for

the most part, are greater than might be expected when compared to available normative data on the cognitive scales. However, the question remains as to whether the gains observed might simply be the result of maturation. More specifically, we must address the issue of whether children who receive some type of individual intervention within a family day care context profit any more than children who do not receive individual treatment in family day care. The subsequent analyses, therefore, will focus on the cognitive changes which occurred within the combined experimental groups compared with the changes which occurred in the family day care control group.

1. PPVT IQ: Table 12 presents the pre- and post-test mean PPVT IQ scores for the combined experimental groups (CE) and the family day care control group (FDCC).

Table 12: PPVT IQ: Mean pre- and post scores for CE and FDCC groups.

<u>Group</u>	<u>Pre</u>	<u>Post</u>	<u>Diff.</u>	<u>t</u>
CE (N=43)	90.7	98.0	+7.3	2.06 (p < .05)
FDCC (N=9)	92.8	94.8	+2.0	.36 (N.A.)

Analysis of the data indicates that the groups were not significantly different at the time of pretesting or at the time of posttesting. However, there was a significant change over time within the CE group and no significant

change within the FDCC group.

2. PPVT Mental Age: Table 13 presents the pre- and post MA scores for the CE and FDCC groups.

Table 13: PPVT Mental Age: Mean pre- and post scores for CE and FDCC groups

<u>Group</u>	<u>Pre</u>	<u>Post</u>	<u>Diff</u>	<u>t</u>
CE (N=47)	2.7	3.7	+1.0	4.00 (p<.05)
FDCC (N=9)	2.8	3.3	+ .5	1.14 (n.s.)

Here again, the groups were not significantly different at pre- or posttesting; however, the average CE within-group change of approximately one year was significant (t=4.00), while the average FDCC within-group change was not (t=1.14, p n.s.).

3. Caldwell PSI: Table 14 presents the pre- and post PSI scores for the CE and FDCC groups.

<u>Group</u>	<u>Pre</u>	<u>Post</u>	<u>Diff.</u>	<u>t</u>
CE (N=44)	25.4	44.8	+19.4	6.60 (p<.05)
FDCC (N=9)	27.7	36.6	+ 8.9	1.63 (n.s.)

Analysis of the pretest scores indicated a nonsignificant difference. However, further analysis of the data indicated that the CE group obtained significantly higher scores at posttesting (t=2.10, p<.05). Moreover, there was a significant within-group increase for the CE children (t=6.60, p<.05), while no significant increase was observed for the FDCC group (t=1.63, p<.05).

4. Basic Concept Inventory (BCI) Part One: Table 15 pre- and posttest means for the BCI Part One for the CE and FDCC groups.

Table 15: BCI Part One: Mean pre- and posttest scores for the CE and FDCC groups

<u>Group</u>	<u>Pre</u>	<u>Post</u>	<u>Diff.</u>	<u>t</u>
CE (N=36)	23.1	15.7	-7.4	3.88 (p<.05)
FDCC (N=9)	23.4	19.1	-4.3	.95 (n.s.)

It should be recalled that all of the BCI subtests employ a negative scoring system; therefore, the lower the score the better the performance. There was no significant pretest difference and no significant posttest difference. Again, however, the 7.4 decrease within the CE group proved to be significant (t=3.88, p>.05), while the 4.3 decrease within the FDCC group was not (t=.95, p>.05).

5. BCI Part Two: Statements. Table 16 presents the mean pre- and posttest scores for the BCI Part II Statements for the CE and FDCC groups.

Table 16: BCI Part II Statements: Mean pre- and posttest scores for the CE and FDCC groups.

<u>Group</u>	<u>Pre</u>	<u>Post</u>	<u>Diff.</u>	<u>t</u>
CE (N=27)	21.8	7.9	-13.9	6.07 (p<.05)
FDCC (N=7)	11.5	5.4	-6.1	1.39 (n.s.)

Analyses of these data indicated that the groups were significantly different at time of pretesting (t=2.68, p<.05), but were not significantly different at post-testing. In addition, there was a significant decrease

in score (13.9) within the CE group ($t=6.07, p < .05$), but no significant decrease in score within the FDCC group ($t=1.39, p > .05$). While it is true that the FDCC group may be facing a "floor effect" (as opposed to "ceiling effect") because of the reverse scoring, the reduction in error for the CE group is striking and conforms to the results of the two previous tests.

6. BCI Part II Questions: Table 17, represents the pre- and posttest means for the BCI Part II Questions subtest for the CE and FDCC groups.

Table 17: BCI Part II Questions: Mean pre- and posttest means for the BCI Part II Questions subtest for the CE and FDCC groups.

<u>Group</u>	<u>Pre</u>	<u>Post</u>	<u>Diff.</u>	<u>t</u>
CE (N=28)	10.2	5.8	-4.4	$t=4.22 (p < .05)$
FDCC (N=7)	9.0	7.7	-1.3	$t= .61 (n.s.)$

Analysis of these data indicated no significant pre-test differences ($t=1.34, p > .05$) and no significant post-test differences ($t=1.06, p > .05$). Again, however, there was a significant decrease in score for the CE group ($t=4.22, p < .05$), while no significant change was noted for the FDCC group ($t= .61, p < .05$).

7. BCI Part III: Table 18 presents the pre- and posttest means for the BCI Part III for the CE and FDCC groups.

Table 18: BCI Part III: Mean pre- and posttest scores for CE and FDCC groups.

<u>Group</u>	<u>Pre</u>	<u>Post</u>	<u>Diff.</u>	<u>t</u>
CE (N=25)	10.8	6.8	-4.0	$5.21 (p > .05)$
FDCC (N=7)	8.7	7.5	-1.2	$1.40 (n.s.)$

Analysis of the data indicates that the FDCC group was superior at the time of pretesting ($t=2.41, p<.05$), and there were no significant differences between groups at the time of posttesting ($t=1.00, p<.05$). However, as Table 17 indicates, there was a significant change within the CE group, and no significant change within the FDCC group.

8. BCI Total Score: Table 19 presents the pre-, post- and difference scores for the BCI total score for the CE and FDCC groups.

Table 19: BCI Total Score: Mean pre- and posttest scores for the CE and FDCC groups.

<u>Group</u>	<u>Pre</u>	<u>Post</u>	<u>Diff.</u>	<u>t</u>
CE (N=26)	69.0	41.5	-27.5	5.86 ($p<.05$)
FDCC (N=7)	51.3	47.1	-4.2	1.14 (n.s.)

In this instance, the FDCC group performed better at the outset ($t=2.03, p>.05$), and the groups were not significantly different at the time of posttesting ($t=.84, p>.05$). Again, however, there was a significant within-group improvement in performance within the FDCC group.

Summary of Results Comparing the Combined Experimental Family Day Care Groups and the Family Day Care Control Group

It should be noted that significant within-group increases in performance were observed for the combined experimental groups on each of the eight cognitive measures employed. On the other hand, no significant pre-post

differences were observed within the FDCC group. One measure, the Caldwell PSI, indicated significantly superior performance for the CE group at time of posttesting. Three of the cognitive measures indicated superior performance for the FDCC group at the time of pretesting, and in one instance (BCI Part II Statements) this relative advantage was maintained at the time of posttesting, though not to a statistically significant degree. The trend, on the other hand, for seven of the eight cognitive measures was for the CE group to receive better absolute scores at the time of posttesting.

It might be argued that analysis of covariance is the more appropriate statistic to use for both the experimental educational group comparisons as well as for the CE and FDCC group comparisons. However, as pointed out earlier, there was a good deal of instability among all groups at the outset of the program. As a result, a number of the children had experience with their particular program prior to being evaluated in the Fall. This, plus other selection factors, seemed to indicate that analysis of covariance was inappropriate because the covariate (in this case Fall testing) was not completely independent of the experimental treatment(s). A repeated measures analysis of variance was therefore employed. Such a procedure yields more precision, power and information than analysis of change scores only.

Ratings on Social-Behavioral Scales

As indicated in the Method section the original plan called for the children to be periodically rated by caseworkers from the Department of Social Services. Because of time, personnel and caseload problems these types of evaluations could not be carried out. Therefore, the teachers of the target children were called on to complete the rating scales. Therefore, whatever results emerged should obviously be viewed with caution because of the many possible sources of bias. However, it could also be argued that whatever sources of bias were operating were probably operating similarly across teachers, or at least that it is unlikely that such biases were systematically related to particular teachers.

As far as the timetable of observations was concerned, the first series of observations was completed in November, 1973 and the second series was completed in June, 1974, a seven-month interval. It should be pointed out that the teachers did not have access to the rating scales during that seven-month period. Despite instructions to the contrary, the teachers tended to use the "high" (socially acceptable) end of the various scales. Therefore, whatever between-group differences or within-group changes which emerge should be interpreted with this fact in mind.

Because the present study was viewed as exploratory in nature, separate ANOVAs were performed on each of the rating scales despite the fact that they obviously are not independent.

1. Behaviors not affected in the present study. Several of the behavioral dimensions revealed no significant between-group differences or within-group changes. These behaviors are listed below:

<u>Behavior Rated</u>	<u>Item Number in Rating Scales</u>
Mood	2
Perfectionism in School Work	5
Aspiration Level	7
Curiosity: Asking Questions	9
Jerkiness of Movements	11
Quarrelsomeness	12
Effect of Praise by Teacher	14
Self-Confidence	17
Originality	19
Internalized Standards	20
Blaming Others	24
Persistence	25
Impulse Control	28
Free Expression of Emotion	29
Seeking Teacher's Approval	32
Communication with Peers	34
Emotional Reaction to Criticism	35

2. Behaviors affected in present study. The variables which did reveal significant between-group differences or within-group changes are outlined below. It should be noted that all of the social-emotional variables were analyzed by means of a 3x2x2 ANOVA, the same type of analysis which was performed on the cognitive measures which were used as dependent variables.

a. Energy Level (Scale Item #1)

Analysis revealed a significant main effect for pre- vs. posttesting ($F=4.86$, $df=1,46$ $p < .05$). No other main effects or interactions were significant. The overall pretest means was 2.3 and the overall posttest mean was 1.7, indicating that the teachers perceived the children as becoming more "vigorous and energetic most of the time".

b. Satisfaction in Academic Achievement (Scale Item #3)

Analysis of this item also indicated a significant main effect for pre- vs. posttesting ($F=5.83$, $df=1,46$ $p < .05$). No other main effects or interactions attained statistical significance. The overall pretest mean was 1.8 and the overall posttest mean was 1.5, indicating that the teachers perceived the children as becoming more satisfied with their academic accomplishments.

c. Hyperactivity (Scale Item #8)

Analysis of this item revealed a significant main effect for the variable of degree of educational structure ($F=4.40$, $df=1,46$, $p < .05$). No other main effects or inter-

actions were significant. The means for the children according to structure are presented below:

High Structure = 2.2
 Medium Structure = 2.0
 Low Structure = 2.8

It appears that the teachers in the high and medium structure groups perceived their children as relatively less hyperactive than did the teachers who were responsible for children in the low-structured educational intervention group. Also, there is no significant difference between the means of the high and medium structure groups. Interestingly, there is no significant change reported for the seven-month period.

d. Curiosity: Exploring for Himself (Scale Item #10)

Analysis of this measure revealed a significant triple interaction involving degree of structure, type of delivery system and pre- vs. posttesting ($F=5.31, df=1,45 p<.05$). The means for the various groups for pre- and posttesting are presented below (Table 20).

Table 20: Means for the various experimental conditions for pre- and posttesting for "Curiosity: Exploring for Himself".

	High		Medium		Low		Raw Me
	Pre	Post	Pre	Post	Pre	Post	
Teacher Only	2.9	2.1	2.8	2.4	2.6	2.9	2.6
Teacher and DCM	2.0	2.7	2.7	2.5	2.1	1.4	2.2
Pre and Post Means	2.5	2.4	2.8	2.5	2.4	2.2	
Cell Means	2.5		2.7		2.3		

These data suggest that the children in the highly structured group were perceived differently at the outset, depending upon whether the children worked only with the teacher or whether the day care mother was also involved. In this case the teacher-only group was perceived as less curious-exploring than the teacher-plus-day-care mother group. However, at the time of the second rating, a "criss-cross" occurred, with the teacher-plus-day-care mother children being perceived as less curious-exploring, while the teacher-only group became morecurious-exploring.

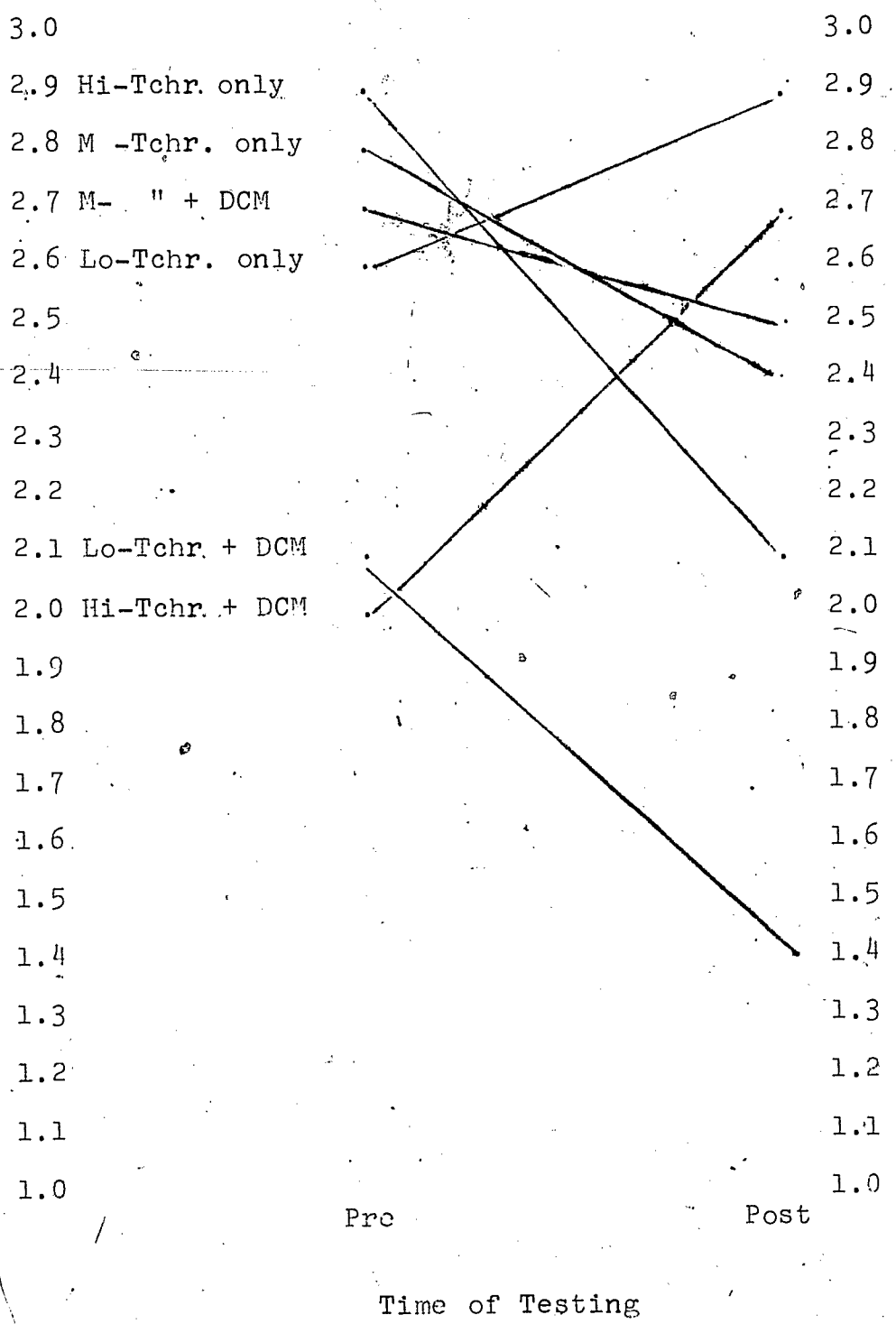
The children in both medium structure groups were perceived as similar at the outset, irrespective of type of delivery system. Both sub-groups increased slightly in curiosity-exploring, with the teacher-only group showing relatively greater gains.

The children in the two low-structure groups were perceived as being somewhat different at the outset, with the teacher-plus-day-care mother group being perceived as more curious-exploring than the teacher-only group. However, at the time of the second observation, the teacher-only group showed a slight decline in curiosity-exploring, while the teacher-plus-day-care mother group showed a rather dramatic increase in this behavior. Frankly, we are at a loss to explain the complete interaction effects in this particular scale item. The importance of a curiosity-exploring dimension (White, 1959) suggests that further exploration of the variable is warranted.

Scale Points for: Curiosity, Exploring For Himself

The following is a graph which might serve to clarify the nature of this triple interaction.

Figure 1: A graph of the three interaction effects on "Curiosity: Exploring for Himself"



e. Daydreaming (Scale Item #15)

Analysis of this characteristic yielded a significant main effect for degree of educational structure ($F=11.97$, $df=1,36$, $p<.05$), with no other significant main effects or interactions. The means for the three educational structure groups are:

High Structure	=	2.9
Medium Structure	=	2.8
Low Structure	=	1.5

It appears that the children in the low-structured group were viewed as engaging in less daydreaming behavior compared to the other two groups.

f. Interest in Schoolwork (Scale Item #18)

Analysis of this dimension revealed a significant main effect for type of delivery system ($F=7.91$, $df=1,46$, $p<.05$), with no other significant main effects or interactions. The means for the two types of delivery systems are presented below:

Teacher only	2.5
Teacher plus day care mother	1.8

In this instance, the children who were worked with by the day care mother in addition to receiving instruction from the teacher were perceived as being more interested in schoolwork and as being more eager to learn, compared to the children who worked only with the teacher.

g. Sulking (Scale Item #21)

Analysis of this characteristic yielded a significant main effect for degree of educational structure ($F=5.89$, $df=2,46$, $p<.05$), and a significant interaction involving educational structure and delivery system ($F=5.07$, $df=2,46$, $p<.05$). The means for the various experimental conditions (collapsed over pre- and posttesting) are presented below (Table 21):

Table 21: Means for the various experimental conditions for "sulking".

	Degree of Structure			Raw Means
	High	Medium	Low	
Teacher Only	3.1	2.6	2.0	2.6
Teacher and DCM	2.1	3.5	2.0	2.5
Cell Means	2.6	3.1	2.0	

With respect to the main effect of structure, the medium-structure children were perceived as sulking most frequently (3.1), followed by the high structure (2.6) and then the low-structure (2.0) groups, respectively. There was no difference in the low-structure group related to the type of delivery system. However, among the high- and medium-structure groups the delivery system manipulation appears to have an impact. Within the high-structure group, the children were perceived as sulking less when working

with both the teacher and day care mother; while in the medium-structure group, the children were viewed as sulking more in the teacher-plus-day-care mother condition.

h. Ability to Interrupt an Activity if Necessary
(Scale Item #22)

Analysis of this dimension indicated a significant main effect for delivery system ($F=19.46$, $df=1,46$, $p<.05$), as well as a significant interaction involving delivery system and degree of educational structure ($F=6.01$, $df=2,46$, $p<.05$). Table 22 presents the means for the various experimental groups, collapsed over pre- and posttesting.

Table 22: Means for the various experimental conditions for ability to interrupt an activity if necessary

	Degree of Structure			Raw Means
	High	Medium	Low	
Teacher Only	1.6	1.2	1.8	1.5
Teacher and DCM	2.6	2.8	1.8	2.4
Cell Means	2.1	2.0	1.8	

In terms of the main effect for delivery system, the children who only worked with the teachers were perceived as being able to be interrupted significantly more easily than those children who were involved in the teacher-plus-day-care mother system. In terms of the interaction, however, it appears that the children in the high- and medium-structure groups who received the teacher-plus-day-care

mother intervention were viewed as significantly more resistant to interruption.

i. Ability to Accept Help in Doing Things (Scale Item #23)

Analysis of this rating yielded a significant interaction involving educational structure and pre- vs. posttesting ($F=5.51$, $df=2,45$, $p<.05$), with no other significant main effects or interactions. Table 23 presents the means for the various experimental groups for pre- and posttesting.

Table 23: Means for the various experimental groups for pre- and posttesting for "ability to accept help on doing things"

	Degree of Structure						Raw Means
	High		Medium		Low		
	Pre	Post	Pre	Post	Pre	Post	
Teacher Only	1.6	1.7	1.5	1.4	1.4	1.3	1.5
Teacher and DCN	1.3	2.0	2.5	2.0	1.8	1.3	1.8
Pre and Post Means	1.5	1.9	2.0	1.7	1.6	1.3	
	1.7		1.9		1.5		

The data indicate that the children in the high-structure group were perceived as demonstrating a moderate decrease in their ability to accept help from pre- to post-testing, while the children in the medium and low-structure groups were viewed as becoming more open to accepting help.

j. Nervous Habits (Scale Item #26)

Analysis of this dimension revealed a significant three-way interaction involving educational structure, delivery system and time of testing ($F=5.69$, $df=2,44$, $p .05$) with no other main effects or interactions attaining significance. Table 24 presents the means for pre- and posttesting for the various experimental groups.

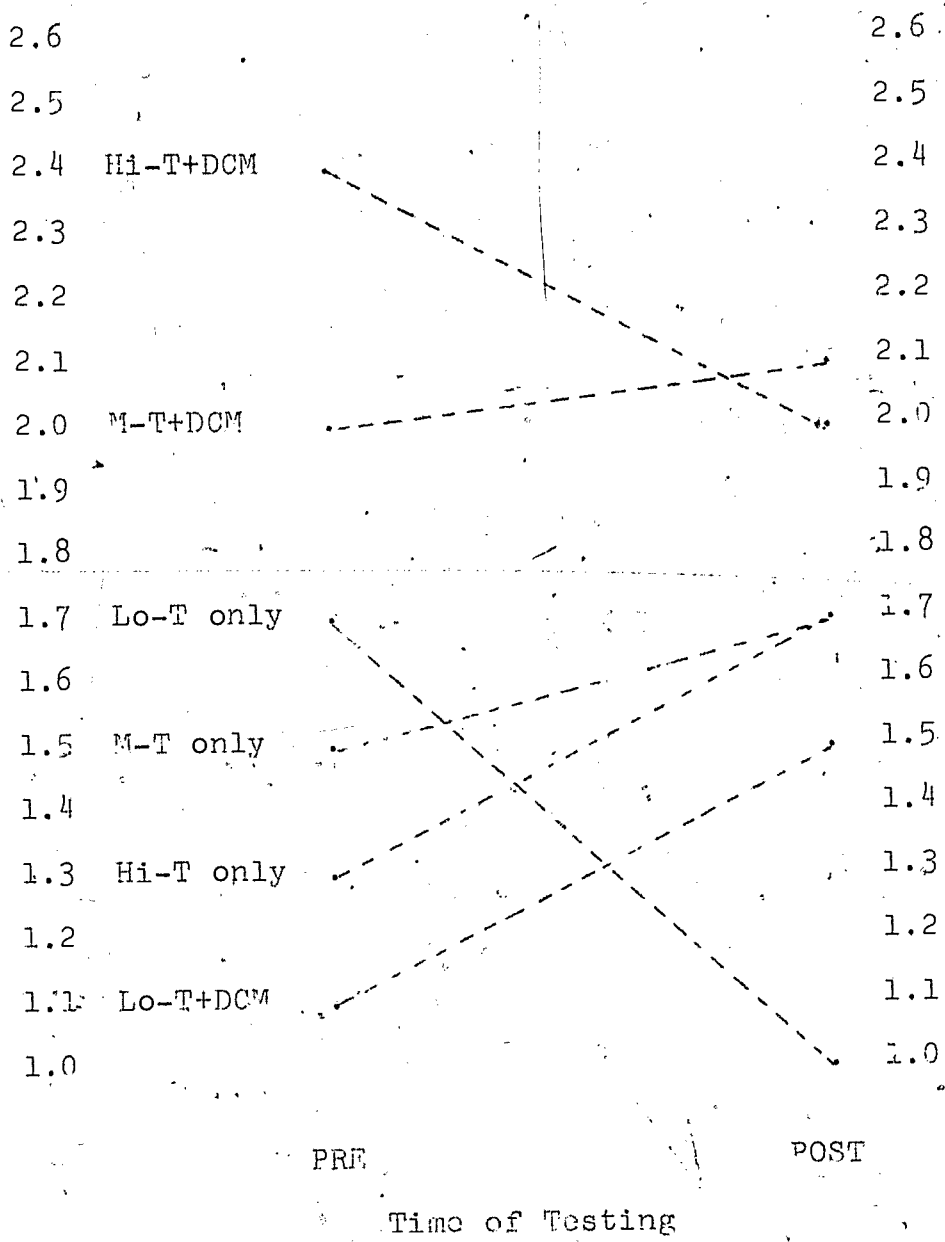
Table 24: Means for the various experimental groups for pre- and posttesting ofr "nervous habits"

	Degree of Structure						Raw Means
	High		Medium		Low		
	Pre	Post	Pre	Post	Pre	Post	
Teachers Only	1.3	1.7	1.5	1.7	1.7	1.0	1.5
Teacher and DCM	2.4	2.0	2.0	2.1	1.1	1.5	1.9
Pre and Post Means	1.9	1.9	1.8	1.9	1.4	1.3	
Cell Means	1.9		1.9		1.4		

As was the case with the three-way interaction for the dimension Curiosity, there was a good deal of variability in teachers' initial ratings of the children's nervous habits. However, despite this initial variability, the two groups which demonstrated decrease in frequency of nervous habits over time were the high-structure teacher-plus-day-care mother and the low-structure teacher-only groups (see Figure 2). Currently, there is no discernible rationale for this particular complex result.

Figure 2: Graph of 3-way interaction for "nervous habits"

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k. Emotional Response to Frustration (Scale Item #30)

Analysis of this characteristic revealed a significant triple interaction for degree of educational structure, delivery system and time of testing ($F=5.22$, $df=1,46$, $p<.05$). Table 25 presents the mean ratings for the various experimental conditions for pre- and post-testing.

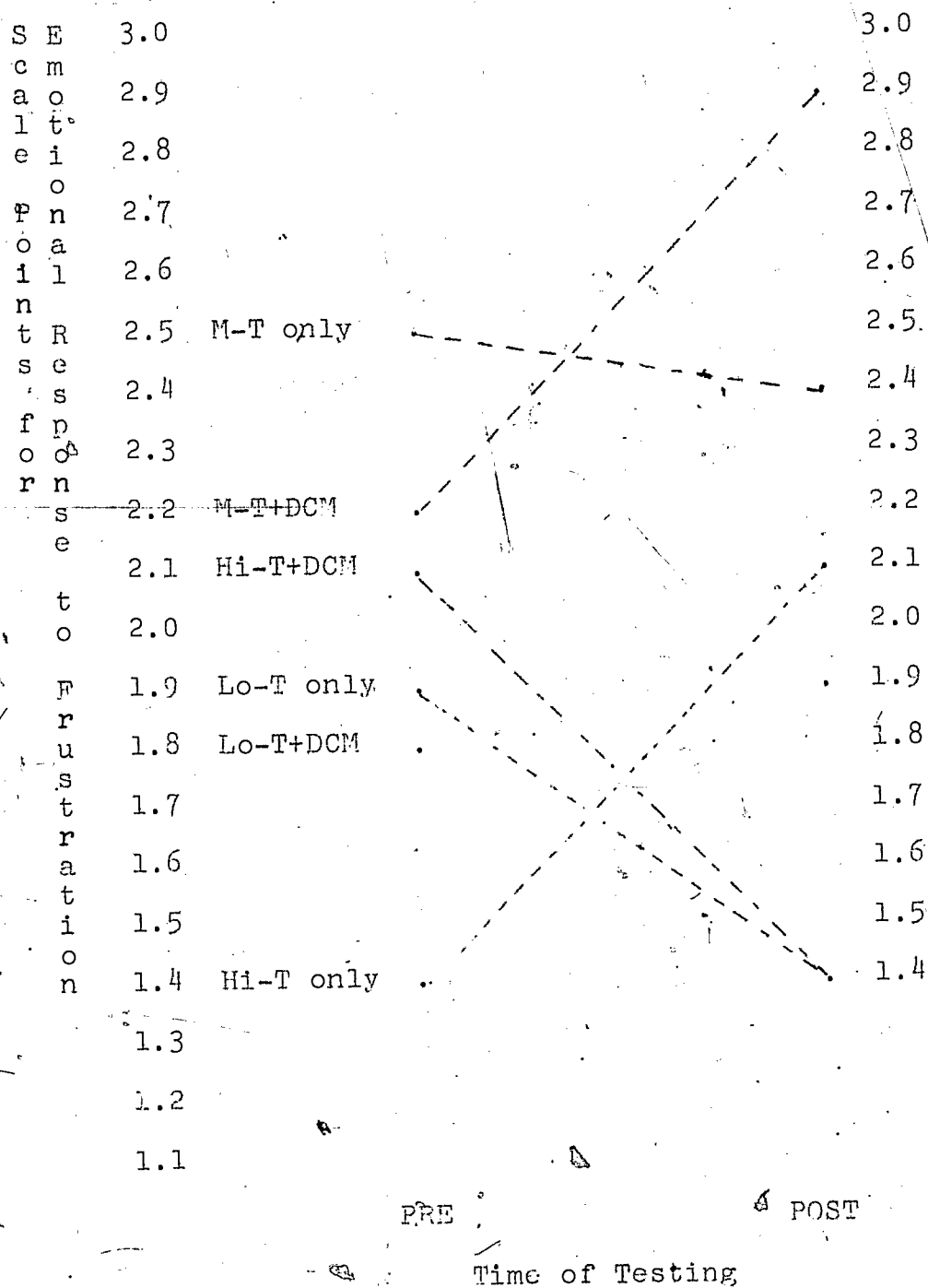
Table 25: Means for the various experimental groups for pre- and posttesting for "emotional response to frustration".

	Degree of Structure						\bar{X}
	High		Medium		Low		
	Pre	Post	Pre	Post	Pre	Post	
Teacher Only	1.4	2.1	2.5	2.4	1.9	1.4	1.9
Teacher and DCM	2.1	1.4	2.2	2.9	1.8	1.9	2.1
Pre and Post Means	1.8	1.8	2.4	2.7	1.9	1.2	
Cell Means	1.8		2.6		1.6		

The following figure (Figure 3) indicates the nature of the pre-post changes for the various experimental groups.

Here again, there was a good deal of variability with respect to the initial ratings. The data indicate that two groups were less able to tolerate frustration from pre- to posttesting: medium structure teacher-plus-day-care mother and high structure, teacher only. Also, two groups were more able to tolerate frustration from pre- to posttesting; high structure teacher-plus-day-care mother and low structure, teacher only.

Figure 3: Graphic presentation of 3-way interaction for "emotional response to frustration"



1. Patience (Scale Item #31)

Analysis of this rating indicated a significant main effect for degree of educational structure ($F=9.56$, $df=2,43$, $p<.05$). No other main effects or interactions were significant. The mean ratings (high score means high impatience) for the various educational groups are presented below:

High Structure	1.8
Medium Structure	3.2
Low Structure	2.5

The data indicate that the children in the highly structured group were perceived as being the most patient, followed by the low structure and medium structure groups, respectively.

m. Intensity of Overt Anger (Scale Item #33)

Analysis of this dimension yielded a significant main effect for degree of structure ($F=7.94$, $df=2,46$, $p<.05$). The means for the three educational structure groups are presented below:

High Structure	1.7
Medium Structure	2.5
Low Structure	1.5

The data indicate that the teachers in the medium educational structure group perceived their children as having a slight but significant tendency in the direction of

displaying more overt anger, as compared to the other two educational groups.

In view of the exploratory nature of this study we believe it is useful to mention that there were four ratings which attained what might be termed "borderline" levels of significance, i.e., F values of 3.50 or greater. We describe these below briefly.

n. Obedience (Scale Item #4)

Analysis of this characteristic yielded an $F=3.93$ ($df=2,46$) for degree of educational structure. The means for the three groups are presented below:

High Structure	2.2
Medium Structure	3.0
Low Structure	2.4

The data indicate a tendency for the children in the medium structure group as being perceived as somewhat less obedient than the children in the other two educational groups.

o. Concentration (Scale Item #6)

Analysis of this dimension yielded an F of 3.52 ($df=1,46$) for pre- vs. posttesting. The pretest mean was 2.7, while the posttest mean was 2.4, indicating a tendency toward increased concentration from pre- to post-testing.

p. Anger (Scale Item #16)

Analysis of this characteristic yielded an F of

3.53 (df=2,46) for degree of educational structure. The means for the various educational groups are presented below:

High Structure	2.1
Medium Structure	2.9
Low Structure	2.0

There was a tendency for the children in the medium structure group to be perceived as displaying more anger, compared to the children in the other two groups.

g. Attention-Seeking Devices (Scale Item #27)

Analysis of this rating yielded an F of 3.59 (df=2,43) for degree of educational structure. The means for the three educational groups are presented below:

High Structure	2.4
Medium Structure	3.0
Low Structure	1.8

The data indicate a tendency for the children in the low structure group to have engaged least in attention-seeking behaviors, followed by the high structure and medium structure groups, respectively.

Summary. No significant main or interaction effects were found for 17 of the 34 behavioral items rated in this study. On three scales, a pre-post main effect was significant; namely, the children were more "vigorous and energetic", more "satisfied with their academic accomplishments", and better able to "concentrate" at the end

of the program than at the beginning. Seven scales revealed a main effect of the degree of structure in the educational program. The children in the high and medium structured programs were less "hyperactive" and more involved in "daydreaming" than those in the low-structured program. Also, children in the high-structured program were more "patient" than those in the low-structured program, who were themselves more patient than those in the medium-structured program. The medium-structured group exhibited more "intense overt anger", "anger in general" and "obedience" as well as using more "attention-seeking devices". In all but "obedience", the medium group was followed, respectively, by the high-structured and then the low-structured groups. There was one significant main effect for the delivery system: Children whose programs involved the teacher working with the day care mother exhibited a "greater interest in schoolwork" than did those children whose programs involved only the teacher. Though there are six other variables for which significant variation was found, the results involve sufficiently complex interaction effects, in which, given the sample size of each group, little confidence should be placed.

No discernible pattern is evident at this point that would serve to organize these results. Further refined analyses may be possible, but not in the context of the present program.

SUMMARY AND CONCLUSIONS

This study examined the effects of three levels of structure of educational programs in the family day care on the cognitive development and social behavior of preschool children. The essential experimental design was a 3x2x2 factorial with three levels of structure of educational programs (high, medium and low), two levels of "delivery" systems (teacher only instructing the child versus teacher and day care mother instructing the child), and two repeated measures (pre- and posttesting). In addition, there was a comparable sized group of children in an identical family day care situation but without any kind of educational intervention. The highly structured educational program follows precisely the Bereiter-Engelmann approach to cognitive development. The medium-structured program was an adaptation of Phyllis Levenstein's Verbal Interaction Program (VIP). The low-structure situation involved what we have called "friendly visitation", which is essentially another friendly adult spending some time with the child but guided by no consistent educational philosophy or pedagogical program.

(Three standardized measures of the cognitive ability of preschool children were used in this study: the Peabody Picture Vocabulary Test (PPVT), Caldwell's Preschool

Inventory (PSI) and Engelmann's Basic Concept Inventory (BCI). In addition, a behavioral rating scale developed by Rubin was used by the teachers to rate each child in the program. Each child was tested on each of the measures and rated on each of the scales at the beginning of the program and then once again at the end of the program.

The results are unequivocal. On each of the cognitive measures used, the children improve from the first testing at the beginning of the program to the second testing at the end of the program. In addition, on both the PPVT and the PSI, which are norm-referenced tests, the children generally exceed the normal maturation levels based on the standardized population. More importantly, while there are no differences among the various groups based upon different educational programs or delivery systems, these experimental groups as a whole show substantial and significant improvement when compared with the day care control group. Thus, it seems that educational intervention has a significantly positive effect on the children's cognitive development irrespective of the exact form that the educational intervention takes. It perhaps should be further pointed out that the total amount of intervention is approximately two to four hours a week. Yet even this minimal amount of special attention to the cognitive development of child results in substantial improvement

in their cognitive abilities.

We found no effects on approximately half of the social behavior ratings. On about another third of the behavior ratings, there are main effects based on the degree of educational structure, secondarily on differences in pre- and post measures, and one on the nature of the delivery system. There seems to be no discernible pattern to these main effects nor to the remainder of the interaction effects which, given the small sample size per cell in the factorial design, does not inspire great confidence.

In short, while we think the results on the cognitive measures are unequivocal, the same may not be said for the social behavior rating scales. It is possible that further detailed analyses of both the cognitive measures and the social rating scales may yield additional information, we feel that the present results are important in their own right.

APPENDIX I

CURRICULUM VITA

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Education:

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Certification:

New York State Licensed Psychologist 1974
School Psychologist - 112341130 1971

Employment:

1972- School Psychologist, Roosevelt Public Schools,
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1972- Psychology Instructor, Hofstra University,
Hempstead, New York
1972- Psychology Instructor, Cooperative College
Center of SUNY at Stony Brook, Hempstead, N.Y.
1973-1974 Supervisor, Day Care Research, Institute for
Research & Evaluation under grant from HEW
1972- Supervisor of Interns, Roosevelt Schools,
Roosevelt, New York
1971- School Psychologist, Woodmere-Hewlett Public
Schools, New York
1970-1972 Assistant Instructor, Hofstra University,
Hempstead, New York
1970-1971 Behavior Modification Trainer and Counselor,
Central Islip State Hospital, New York
1971-1972 School Psychology Intern, Uniondale Public
Schools, Uniondale, New York
1971-1972 Diagnostician and Behavior Therapist, Psycho-
logical Evaluation and Research Center,
Hofstra University, Hempstead, N.Y.
1971-1972 Therapist, South Oaks Psychiatric Hospital
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1968-1969 Psychology Teacher, C.W. Post College,
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1973- Clinical Psychologist, Private Practice,
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1970-1972 School Psychologist, Islip Public Schools, N.Y.
1970-1971 Perceptual Training Consultant, Roslyn Center
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1970-1971 Clinic Internship, St. Anthony Guidance Clinic
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1970 Psychological Assistant, Token Economy Program,
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1968-1970 School Psychologist, Project Pupil, Fremont, Ohio
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Professional Organizations:

American Psychological Association
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Articles and Presentations:

Crisci, R. & Kassino, H., Effects of perceived level of expertise, strength of advice and setting on parental compliance, Journal of Social Psychology, 1973, 89, 245-250.

Crisci, R. & Kassino, H., The School Psychologist: Hidden or Visible? Nassau County Psychologist Newsletter, Fall 1973.

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Crisci, R., Behavior modification with young children. Paper presented at BCCES SCOPH conference, Montauk, L.I., November, 1972.

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Education:

Ph.D. 1964 Brown University
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Professional Experience:

1971- Associate Professor in Psychology, Graduate
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1967-1971 Associate Professor, Graduate Medical School
Emor University
1964-1966 Research Associate in Psychology, Brown Univ.

Publications:

- "Developmental changes in the olfactory threshold of the neonate". Child Development, 34, 371-376. (With Lipsitt, L.P. & Engen, T.)
- "Two attempts to demonstrate tonal suppression of non-nutritive sucking in neonates". Percept. mot. Skills, 1963, 17, 521-522. (With Levni, G.R.)
- "Conditioned sucking in the human newborn". Psychon. Sci., 1963, 1, 29-30 (With Lipsitt, L.P.)
- "Olfactory responses and adaptation in the human neonate". J. comp. physiol. Psych. 56, 73-77. (With Engen, T. and Lipsitt, L.P.)
- "Skin Conductance in the Human Neonate". Child Devel., 1964, 35, 1297-1305.
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- "Primary and secondary punishment of toe sucking in the infant rhesus monkey". Psy. Sci., 1965, 2, 73-74. (With Cox, J., Bosack, R., and Anderson, K.)
- "Rearing of M. Mulatta from birth". Laboratory Animal Care Panel, 1966, 16, 476
- "Sucking behavior in the human infant: an evaluation of the process and its modifications". Advances in Child Development and Behavior, 1967, III, 1-50.
- "Change in neonatal response to optimizing and non-optimizing sucking stimulation". Psychon. Sci., 1965, 2, (With Lipsitt, L.P.)
- "The conditioned Barkin response in human newborns". Psychon. Sci., 1965, 2, 287

Herbert Kaye (cont.)

- "Operant avoidance in an infant rhesus within the first month of life". Psychon. Sci. 1965, 3, 371-372.
- "Enhancement of neonatal sucking through reinforcement". J. Exp. Child Psychol., 163-168. (With Lipsitt, L.P. and Bosack, T.)
- "The effects of feeding and tonal stimulation on non-nutritive sucking in the human newborn". J. Exp. Child Psychol., 1966, 3, 131-145.
- "Work decrement and rest recovery during nonnutritive sucking in the human neonate." J. Exp. Child Psychol., 1966, 3, 146-154. (With Levin, G.R.)
- "Sensory Processes in Infancy". In Reese, H. and Lipsitt, L.P. (Eds.) Experimental Child Psychology, New York: Academic Press, 1969, Vol. 3.
- "Effects of variation of oral experience upon suckle". In Bosma, J. Oral Sensation and Perception, Vol. 3, C.C. Thomas, N.Y., 1971, (In press).
- "Agreement among subjects in choosing trigram labels for random shapes". American Journal of Psychology, Vol. 83, No. 1, March 1970.

Meetings:

- The New York Academy of Sciences' Conference on Experimental Medicine and Surgery in Primates" Sept. 1967
- International Conference on Biocybernetics, February, 1968, Washington, D.C.
- International Congress of Psychology, London, July 28 - August, 1969.
- The Second Symposium on "Oral Function and Behavior in the Newborn" NIMH Conference, Washington, D.C. Nov. 1970

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APPENDIX II

MATERIALS USED IN THE VERBAL INTERACTION PROGRAM

(Verbal Interaction Stimulus Materials)

I Books

Pat the Bunny - D. Kunhardt
Goodnight Moon - M.W. Brown
Tall Book of Mother Goose - F. Rojankovsky
Millions of Cats - W. Gag
Runaway Bunny - M.W. Brown
Cat in the Hat - Dr. Seuss
Snowy Day - E.J. Keats

II Toys

Toy Chest
Playskool Knockout Bench
Sesame Street Shapes and Colors Stick-ons
Playskool Pounding Bench
Postal Station
Col-o-rol Wagon
Cash Register
Creative Number Sorter
Tambourine
School Bus
Xylophone
Telephone
Tea Set
Action Garage
Farm
Hand Puppets
Fruit Puzzle
Things Puzzle
Pick-up Circus Puzzle
Pick-up House Puzzle
Pick-up Vehicle Puzzle

APPENDIX III

Rating Guide for Teacher's Rating Scales

INSTRUCTIONS:

1. You are asked to fill in one set of rating scales for each child in your class who is in this study.
2. Before you start rating, please familiarize yourself with the full description of the rating scales. You will find it in this Rating Guide, following the instructions you are now reading. The title of each scale is meant merely to give a rough indication of the nature of the scale. Only a careful reading of the whole description of a given scale will reveal in detail on what kinds of behavior, or what personal characteristics, we ask you to rate the child.
3. For each scale you have a choice of rating a child as 1, 3, 5, 7, or 9. In the description of each scale we have indicated when a child should be rated as 1, 5 or 9. (Sometimes the meaning of 3 and 7 is also spelled out; in other cases it follows from the context.)
4. Please indicate rating number in the box to the left of the question.
5. Please rate each child according to his usual behavior in field covered by each particular scale, always considering the last four weeks just preceding the date of your rating. Try to not let one or two unusual incidents, or the child's behavior on the last day or two, unduly influence your rating, but rather consider the whole four-week period.
6. The numbering of the scale points do not represent value judgments. One or nine are not necessarily "good" or "bad" positions. What we would normally consider as average for the age group is not necessarily at 5, the midpoint of the scale, although sometimes it is.
7. It is also imperative that you should not hesitate to rate a child in an "uncomplimentary" way. The importance of obtaining as objective a rating as humanly possible is very obvious. These ratings will not be used for or against anybody, and the only way we can hope for a true representation, in the ratings, of the existing individual differences is if you can persuade yourself to give us your own true opinions.
8. When you rate a child on one particular scale, try to base your rating exclusively on the area under consideration. Do not let the scales color your rating on this particular scale.
9. The masculine pronoun (he) has been used throughout for convenience. It applies whether the child whom you are rating is male or female.

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Child's Name _____ Teacher _____

Date of Observation _____ Center/Home _____

Question
Number

DESCRIPTION OF SCALES

1.

ENERGY LEVEL

1. Child is vigorous and energetic most of the time. Is full of vim and pep.
- 3.
5. Child sometimes displays great energy, (e.g., in stimulating situations) but quite often is lacking in vim and vigor.
- 7.
9. Child is difficult to stir to energetic activities. Most of the time he is lacking in vim and vigor.

2.

MOOD

1. Child is more often cheerful and happy than depressed and gloomy.
- 3.
5. Child is sometimes cheerful and happy, and sometimes depressed and gloomy.
- 7.
9. Child is more often depressed and gloomy than cheerful and happy.

3.

SATISFACTION IN ACADEMIC ACHIEVEMENT

1. Child often shows pleasure at his academic achievements.
- 3.
5. Child sometimes shows pleasure at his academic achievements.
- 7.
9. Child never shows pleasure at his academic achievements. It does not seem to make any difference to him whether he is achieving a lot or very little.

4.

OBEDIENCE

1. Child always obeys commands, requests, suggestions by teacher and other adults in authority.
- 3.
5. Child usually obeys requests but occasionally disobeys.
- 7.
9. Child habitually resists suggestions by teacher and other adults.

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5. PERFECTIONISM IN SCHOOL WORK

1. Child wants to have all his work turn out perfectly. He is seldom satisfied with the work he has done, e.g., often rewrites pages; if he made a mistake in reading one word he insists on repeating the whole sentence, may destroy his paintings because he is dissatisfied with them, etc.
- 3.
5. Child sometimes makes spontaneous attempts to improve his work but these efforts are not very great or persistent.
- 7.
9. Child is satisfied with doing the sloppiest work in school subjects. Usually takes the line of least effort.

6. CONCENTRATION (Attention Span)

1. Child can usually concentrate on his task well and for long periods of time.
- 3.
5. Child is able to stay with his work for a limited time.
- 7.
9. Child shifts his attention from his work excessively frequently. Is continually stopping his main activity in order to gaze about, look at somebody else, etc.

7. ASPIRATION LEVEL

1. Child is usually willing to try things that are hard to do. He usually strives to attain more and more.
- 3.
5. Child is sometimes willing to try to do hard things but often prefers easy tasks.
- 7.
9. Child characteristically undertakes only what is easy. He never seems to strive for more than he can easily manage.

8. HYPERACTIVITY

1. Child can sit quietly for long periods. Does not squirm or fidget much.
- 3.
5. Child tends to fidget somewhat, but his restlessness is not very marked.
- 7.
9. Child cannot sit still, tends to fidget about a great deal, is exceptionally restless.

9. CURIOSITY: ASKING QUESTIONS

- 1. Child is keenly curious and inquisitive. Asks many questions (for information, not simply for attention). Usually insists on more than a superficial answer to his questions.
- 3.
- 5. Child often tries to get information about new or strange things, but does not pursue his questioning very far.
- 7.
- 9. Child conspicuously fails to ask questions, even about new or strange things.

10. CURIOSITY: EXPLORING FOR HIMSELF

- 1. Child shows a very high degree of curiosity by exploring, investigating, trying out things. He always wants to know how things work, what is inside, what it smells like, etc.
- 3.
- 5. Child shows tendencies to explore for himself, but does not pursue this very far.
- 7.
- 9. Child never tries to explore, investigate, or try out things for himself. Shows no curiosity in these respects.

11. JERKINESS OF MOVEMENTS

- 1. Child's movements are very smooth and harmonious.
- 3.
- 5. Movements are not as smooth and well-controlled as could be expected at his age, but they are not excessively jerky.
- 7.
- 9. Child's movements are often jerky, sudden, abrupt.

12. QUARRELSOMENESS

- 1. Child very seldom gets involved in disputes, quarrels, or fights with other children.
- 3.
- 5. Child quarrels and fights with other children about as much as is expected at his age.
- 7.
- 9. Child's contact with others very often results in argument, quarreling, fighting, etc., (regardless of who started it).

13. EFFECT OF PRAISE BY TEACHER

- 1. Praise usually stimulates child to greater efforts.
- 3. Praise sometimes stimulates child to greater efforts, sometimes not, but is not likely to make him decrease his efforts.
- 5. Praise sometimes stimulates child to greater efforts but sometimes makes him relax his efforts.
- 7. Praise sometimes makes child relax his efforts, sometimes not, but is not likely to stimulate him to greater efforts.
- 9. Praise usually makes child relax his efforts. Apparently he only works hard until he gets the praise.

14. EFFECT OF CRITICISM BY TEACHER

- 1. Criticism of quality or quantity of work done by the child usually stimulates him to greater efforts.
- 3. Criticism sometimes stimulates child to greater efforts, sometimes not, but is not likely to make him decrease his efforts.
- 5. Criticism sometimes stimulates child to greater efforts but sometimes makes him decrease his efforts.
- 7. Criticism sometimes makes child decrease his efforts, sometimes not, but is not likely to stimulate him to greater efforts.
- 9. Criticism usually makes child decrease his efforts, to "give up".

15. DAYDREAMING

- 1. Child is never seen daydreaming.
- 3.
- 5. Child indulges in some daydreaming but this does not present a problem.
- 7.
- 9. Child indulges in excessive daydreaming.

16. ANGER

- 1. Child gets angry only very rarely.
- 3.
- 5. Child gets angry once in a while, about as often as most other children his age.
- 7.
- 9. Child gets angry very often. Is readily angered by difficulty, failure, disappointment, denial of his wishes, violation of his rights, disciplinary measures, teasing, aggression on part of other children, etc.

17. SELF-CONFIDENCE

- 1. Child usually shows great self-confidence. E.g., he volunteers to take on some responsibility, trusts his own judgments, is willing to express his opinions, etc.
- 3.
- 5. Child shows some self-confidence.
- 7.
- 9. Child shows very little self-confidence. His behavior is usually hesitant. He tries to see first how others do something before he does it, he is reluctant to express opinions, etc.

Please rate on the basis of apparent (overt) self-confidence regardless of what may lie behind the surface.

18. INTEREST IN SCHOOLWORK

- 1. Child is very eager to learn, is easily stimulated by schoolwork.
- 3.
- 5. Child is interested sometimes, but not so much other times.
- 7.
- 9. Child shows no interest in schoolwork at all.

19. ORIGINALITY

- 1. Child shows great originality, e.g., uses play equipment in novel ways, tries out new methods in painting, invents new games, etc. Does not copy others.
- 3.
- 5. Child sometimes copies others, but sometimes produces rather original ideas.
- 7.
- 9. Child shows no originality at all. Follows the conventional ways or copies others.

20. INTERNALIZED STANDARDS

- 1. Child often shows signs of having internalized standards of behavior, e.g., waits for his turn, recognizes others' rights, does not take advantage of weaker children, owns up to some mischief he has done, seems to feel badly after hitting somebody, etc.
- 3.
- 5. Child shows some of these signs sometimes, but not very often.
- 7.
- 9. Child shows no signs at all of any internalized standards of behavior.

21.

SULKING

1. Child practically never sulks.
- 3.
5. Child sulks infrequently, or for very short times.
- 7.
9. Child sulks frequently or prolongedly.

22.

ABILITY TO INTERRUPT AN ACTIVITY IF NECESSARY

1. Child is easily able to interrupt even a much favored activity if there is a necessity for it.
- 3.
5. Child sometimes finds it difficult to interrupt some activities.
- 7.
9. Child finds it extremely difficult to interrupt an activity, even if it is one he does not really like.

23.

ABILITY TO ACCEPT HELP IN DOING THINGS

1. Child is always able and willing to accept help in his academic work.
- 3.
5. Child sometimes refuses to accept help.
- 7.
9. Child habitually refuses to accept help.

24.

BLAMING OTHERS

1. Child very rarely blames others for his own difficulties or failures.
- 3.
5. Child occasionally blames others.
- 7.
9. Child customarily blames others for all his difficulties and failures.

25.

PERSISTENCE

1. Child tends to persist steadfastly with a task, despite great difficulty or failure. Does not lose heart easily.
- 3.
5. Child usually persists for a while but if the difficulty is not overcome fairly promptly, he quits.
- 7.
9. Child loses heart and quits too readily. Shows no persistence at all.

26. NERVOUS HABITS

- 1. Child is free from all signs of nervous habits, such as thumb sucking, nail biting, hair curling or twisting, clutching hands, biting lips, etc.
- 3.
- 5. Child shows one or two nervous habits but only to a mild degree.
- 7.
- 9. Child shows numerous habits - or - marked addiction to one.

27. ATTENTION-SEEKING DEVICES

Please consider so-called "negative" attention-seeking devices like the following:

needless requests or questions, silly verbal behavior, clowning, showing off, shouting, testing limits, tattling, crying, tantrums, hiding, playing sick, or other. (Apart from your rating, please mention what kind of attention-seeking devices this child employs.)

- 1. Child never seeks teacher's attention through devices similar to the ones described above.
- 3.
- 5. Child occasionally employs such devices.
- 7.
- 9. Child quite frequently resorts to such devices.

28. IMPULSE CONTROL

- 1. Child has usually good control of his impulses. Very seldom acts impulsively.
- 3.
- 5. Child has some control of his impulses, but sometimes acts rather impulsively.
- 7.
- 9. Child is extremely impulsive. He very seldom stops to think about the consequences of his actions.

29. FREE EXPRESSION OF EMOTIONS

- 1. Child expresses his emotions freely. Rarely attempts to conceal them.
- 3.
- 5. Child sometimes attempts to conceal his emotions.
- 7.
- 9. Child always attempts to conceal his emotions.

Please indicate: what kinds of emotions do you have in mind?

30. EMOTIONAL RESPONSE TO FRUSTRATION

- 1. If child is frustrated in trying to accomplish some task, he usually is able to do something about it in an unemotional way: tries to overcome the obstacle, seeks help, leaves the situation, etc.
- 3.
- 5. Child sometimes reacts to frustration unemotionally but sometimes displays strong emotions.
- 7.
- 9. Child usually reacts to frustration in a highly emotional way: might cry or kick, leave the situation sobbing, etc.

31. PATIENCE

- 1. Even if child wants to do something badly, he can usually bring himself to wait patiently. E.G., if he is thirsty, he can wait for a drink, or if he wants to use some material or read a book that is tied up, he can do something else in the meantime and then go back to it, etc.
- 3.
- 5. About average patience. Child can wait for short periods but gets restless if he has to wait for long.
- 7.
- 9. Child is exceptionally impatient. Whatever he wants to have or to do, he wants it immediately.

32. SEEKING TEACHER'S APPROVAL

- 1. Child does actively solicit teacher's approval in appropriate ways through acceptable behavior.
- 3.
- 5. If child does not get a lot of approval from teacher spontaneously, he actively solicits it.
- 7.
- 9. Teacher's approval is all-important for child. He can't have enough of it. Even if he gets a lot, he still solicits more.

33. INTENSITY OF OVERT ANGER

- 1. Child practically never overtly displays anger. He either does not become angry or suppresses overt signs of his anger.
- 3. When child is angered, he usually only shows mild temper, not violent.
- 5. When angered, child is equally likely to show mild or violent temper.
- 7. When angered, child is more likely to show violent than mild temper.
- 9. When angered, the child's display of anger is almost always violent, like throwing, hitting, kicking things, crying violently, becoming violently negativistic, etc.

34. COMMUNICATION WITH PEERS

1. Child talks to other children freely and spontaneously.
 - 3.
 5. Talks fairly freely to his friends but considerably less to others.
 - 7.
 9. Child is not inclined to speak to other children unless spoken to and even then would hold back sometimes.
-

35. EMOTIONAL REACTION TO CRITICISM

1. Child tends to ignore criticism toward him. Either would not act upon adverse comments or would appear not to have heard or understood critical remarks.
 - 3.
 5. Child tends to take notice of criticism (e.g., by changing his behavior) but does not get upset or mad about it.
 - 7.
 9. Child is extremely sensitive to criticism, e.g., gets mad or tearful if criticized.
-

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NASSAU COUNTY DAY CARE PROGRAM

GENERAL INTERVIEW SCHEDULE

1. Code No. of Interviewer _____
2. Date of Interview _____ (Month) _____ (Year)

INFORMATION ABOUT CHILD

3. Code No. of day care child _____
4. Sex of child (check one): F _____ (1) M _____ (2)
5. Child's age as of Oct. 1, 1973 (in months): _____
6. Child's birthweight (in ounces): _____
7. Based on your experience, how would you categorize the child's present health status? (Check one.)
- Poor _____ (1) Fair _____ (2) Good _____ (3) Excellent _____ (4)

8.a. Did the child have any past or current significant medical problems e.g., convulsive disorders, cardiac, asthma, hernia, respiratory, psychiatric, etc.? (Please check one)

No _____ (0) Yes _____ (1)

b. If "Yes", please list them: _____

9. List the sex, age as of Oct. 1, 1973, and grade or occupation of the siblings currently living with the child, starting with the youngest:

	<u>Sex (F=1;M=2)</u>	<u>Age on 10/1/73 (years and mos.)</u>	<u>School grade or occupation</u>
(1)			
(2)			
(3)			
(4)			
(5)			
(6)			
(7)			
(8)			
(9)			
(10)			

10. How many siblings are currently living at home? _____

11. What is the total number of older siblings currently living at home? _____

12. How many of the older siblings living at home are of the same sex? _____

13. How many of the older siblings living at home are of the opposite sex? _____

14. What is the total number of younger siblings currently living at home? _____

15. How many of the younger siblings living at home are of the same sex? _____

16. How many of the younger siblings living at home are of the opposite sex? _____

17. Is the child's mother living with her/him? (Please check one.)

No _____ Yes _____
(0) (1)



18. Is the child's father living with her/him? (Please check one.)

No Yes
(0) (1)

19. Including everyone, what is the total number of people living in the same home?

20. Excluding child, parents and siblings, please list all other members of the household (e.g., grandparent, aunt, uncle, etc.)

Relationship	Sex (F=1;M=2)	Age
(1)		
(2)		
(3)		
(4)		
(5)		
(6)		

21. Which is (are) the predominant language(s) used in the child's home? (Please check one.)

- English only (1)
- Spanish only (2)
- English and Spanish (3)
- English and other (specify) (4)
- Other only (specify) (5)

INFORMATION ABOUT CHILD'S MOTHER

22. Age (in years)

23.a. Highest school grade completed (Please check one.):

- Elementary (6th grade or less) (1)
- Junior high school (7th-8th grade) (2)
- Some high school (3)
- Completed high school (4)
- Some college (5)
- Completed college (6)

00111

b. Has the mother had any specific vocational training? (Please check one.) No (0) Yes (1)

c. If "Yes", please specify what kind, or check "Not applicable".

Not applicable (9)

24.a. Mother's place of birth (please specify): _____

b. Also, check one:

Rural (1)

Small city (under 25,000) (2)

Large city (over 25,000 e.g., Mobile, Ala.; Harrisburg, Pa.; Troy, N.Y.) (3)

Suburban (4)

Metropolis (e.g., N.Y.C., Chicago, Boston, San Francisco) (5)

25.a. Mother's employment status - i.e., paid employment outside of home (please check all that apply): (Blank = 0; Check = 1)

(1) None

(2) Part-time (night)

(3) Part-time (day)

(4) Full-time (night)

(5) Full-time (day)

(6) Weekends

(7) Other (please specify) _____

b. Mother's major occupation (paid)

Please specify: _____

Not applicable (9)

00112

26.a. Is mother currently engaged in an occupational training program?
(Please check one.) No (0) Yes (1)

b. Approximately how many hours per week is she involved in such training?
Not applicable (99)

c. For what occupation is she training? _____
Not applicable (99)

27. What are the occupational aspirations of mother? (Please try to be as specific as possible.)

28. What does the mother estimate her own general health status to be?
(Please check one.)
Poor (1) Fair (2) Good (3) Excellent (4)

29. On the average, how many hours per day does mother spend with the child who is receiving day care? _____

30. What was the average weekly income of the family prior to the child's receiving day care service? _____

31. What is the average weekly income of the family now while the child is receiving day care service? _____

32. Within the last 5 years, how many different addresses has the family had? _____

INFORMATION ABOUT CHILLIE BARNER

33. Age (in years) _____

34.a. Highest school grade completed (Please check one.):

Elementary (6th grade or less) _____ (1)

Junior high school (7th-8th grade) _____ (2)

Some high school _____ (3)

Completed high school _____ (4)

Some college _____ (5)

Completed college _____ (6)

b. Has the father had any specific vocational training? (Please check one.) No _____ Yes _____ (1)

c. If "Yes", please specify what kind, or check "Not applicable".

Not applicable _____ (4)

35.a. Father's place of birth (Please specify): _____

b. Also, please check one:

Rural _____ (1)

Small city (under 25,000) _____ (2)

Large city (over 25,000 e.g., Mobile, Ala.; Harrisburg, Pa.; Troy, N.Y.) _____ (3)

Suburban _____ (4)

Metropolis (e.g., N.Y.C., Chicago, Boston, San Francisco) _____ (5)

36. Father's employment status - i.e., paid employment outside of home (Please check all that apply):

(1) None _____

(2) Part-time (night) _____

(3) Part-time (day) _____

(4) Full-time (night) _____

(5) Full-time (day) _____

(6) Weekends _____

(7) Other (specify): _____

37.a. Is father employed? (Check one.) No (3) Yes (1)

b. Father's occupation (If unemployed, what kind of work would he do if he were working?)

Please specify: _____

38.a. Is father currently engaged in an occupational training program? (Please check one.) No (0) Yes (1)

b. Approximately how many hours per week is he involved in such training? _____

Not applicable (99)

c. For what occupation is he training? _____

Not applicable (99)

39. What are the occupational aspirations of father? (Please try to be as specific as possible.)

40. What does the father estimate his own general health status to be? (Please check one.)

Poor (1) Fair (2) Good (3) Excellent (4)

41. On the average, how many hours per day does the father spend with the child who is receiving day care? _____

42. What was the average weekly income of the family prior to the child's receiving day care service? _____

43. What is the average weekly income of the family now while the child is receiving day care service? _____

44. Within the last 5 years, how many different addresses has the family had? _____

PHYSICAL FACILITIES IN THE CHILD'S HOME

45. How many rooms, excluding bathrooms, does the family occupy? _____

46.a. Does the child have access to a television set around the house? (Please check one.) No (0) Yes (1)



b. Approximately how many hours per day does he watch television? _____

c. What television programs does he typically watch? (Please specify, or check "not applicable".)

Not applicable _____
(9)

47.a. Does the family subscribe to, or routinely buy, a newspaper(s)?
(Please check one.) No _____ Yes _____
(0) (1)

b. Please specify which ones, or check "Not applicable".

Not applicable _____
(0)

48.a. How many magazines/periodicals does the family subscribe to, or routinely buy? _____

b. Please specify which ones, or check "Not applicable".

Not applicable _____
(9)

49. Based on your experience and the usual weather for the season, would you say that the temperature of the house is (please check one)

Colder than average _____
(1)

Average _____
(2)

Warmer than average _____
(3)

50. Based on your experience, would you say that the noise level of the house is (please check one):

- Noisy _____ (1)
- Average _____ (2)
- Quieter than average _____ (3)

51. Based on your experience, how would you rate the household with respect to cleanliness? (Please check one.)

- Dirty _____ (1)
- Average _____ (2)
- Very Clean _____ (3)

52. Based on your experience, how would you rate the illumination of the household? (Please check one.)

- Dark _____ (1)
- Adequate _____ (2)
- Bright _____ (3)

53. Approximately how many playmates, including siblings, does the child have, i.e., children played with on a fairly regular basis? _____

54. How many of the child's brothers and/or sisters are his playmates? _____

55. Approximately how many of the child's playmates, including sibling playmates, are of the same sex? _____

56. Approximately how many of the child's playmates, including sibling playmates, are of the opposite sex? _____

MASSACHUSETTS DAY CARE PROGRAM

APPLICANT'S INTERVIEW SCHEDULE

DATE: _____ DAY: _____

PHYSICAL FACILITIES IN THE SITTER'S HOME (where applicable)

57. Excluding bathrooms, how many rooms are there in the sitter's home? _____

58. Excluding bathrooms, how many of these rooms are used for the day care service? _____

59.a. Do the children have access to a television set in the house? (Please check one.) No (0) Yes (1)

b. Approximately how many hours per day do they watch television? _____

c. What television programs do they typically watch? (Please specify, or check "Not applicable".)

Not applicable (0)

60.a. Does the family subscribe to, or routinely buy, a newspaper? (where applicable) (Please check one.) No (0) Yes (1)

b. Please specify which ones, or check "Not applicable".

Not applicable (0)

61.a. How many magazines/periodicals does the family subscribe to? (where applicable) _____

b. Please specify which ones, or check "Not applicable".

Not applicable (0)

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62. Based on your experience and the usual weather for the season, would you say that the temperature of the house is (please check one):

Colder than average _____ (1)

Average _____ (2)

Warmer than average _____ (3)

63. Based on your experience, would you say that the noise level of the house is (please check one):

Noisy _____ (1)

Average _____ (2)

Quieter than average _____ (3)

64. Based on your experience, how would you rate the household with respect to cleanliness? (Please check one.)

Dirty _____ (1)

Average _____ (2)

Very clean _____ (3)

65. Based on your experience, how would you rate the illumination of the household? (Please check one.)

Dark _____ (1)

Adequate _____ (2)

Bright _____ (3)

66. How many children, including her own, are currently being cared for by this sitter? (where applicable) _____

67. Of the total number in question #66, how many children are her own? (where applicable) _____

68. How many children in the sitter's home does the child play with on a fairly consistent basis? (where applicable) _____

69. How many of these children are of the same sex? _____

70. How many of these children are of the opposite sex? _____

71. Please specify the sex and age (in months) as of Oct. 1, 1973, of all children being cared for in this sitter's home (where applicable). If the child is not her own, please check appropriate column.

	Sex (1=1; 2=2)	Age (in months)	Sitter's own child?	
			No (0)	Yes (1)
(1)	_____	_____	_____	_____
(2)	_____	_____	_____	_____
(3)	_____	_____	_____	_____
(4)	_____	_____	_____	_____
(5)	_____	_____	_____	_____
(6)	_____	_____	_____	_____

INFORMATION ON SITTER

72. Code number of sitter _____

73. Age of sitter _____

74. Highest school grade completed (Please check one):

Elementary (6th grade or less) _____ (1)

Junior high school (7th-8th grades) _____ (2)

Some high school _____ (3)

Completed high school _____ (4)

Some college _____ (5)

Completed college _____ (6)

75.a. Sitter's place of birth (please specify) _____

Also, please check one:

Rural _____ (1)

Small city (under 25,000) _____ (2)

Large city (over 25,000 e.g., Mobile, Ala.; Harrisburg, Pa.; Troy, N.Y.) _____ (3)

Suburban _____ (4)

Metropolis (e.g., N.Y.C., Boston, Chicago, etc.) _____ (5)



76. Excluding children who come for baby sitting, please list (where applicable) all members of the household (e.g., husband, children, parents, niece, nephew, etc.)

	<u>Sex</u> (M=1; F=2)	<u>Age</u>	<u>School grade/Occupation</u>
(1)			
(2)			
(3)			
(4)			
(5)			
(6)			
(7)			
(8)			
(9)			
(10)			

77.a. Excluding children being sat for, are there any other people who are regularly in the home during the day time e.g., grandparents, older siblings, etc.? (Please check one.) No (0) Yes (1)

b. Please specify, or check "not applicable".

	<u>Relationship</u>	<u>Sex</u> (M=1; F=2)	<u>Age</u>
(1)			
(2)			
(3)			
(4)			
(5)			

Not applicable (0)

78. Which is (are) the predominant language(s) used in the sitter's home? (Please check one where applicable).

- English only _____ (1)
- Spanish only _____ (2)
- English and Spanish _____ (3)
- English and other (specify) _____ (4)
- Other only (specify) _____ (5)

79. In your judgment, how does this sitter appear to feel about the position of being a sitter? (Please check any that apply.)

- (1) Just a chore, _____
- (2) Financially rewarding _____
- (3) Personally rewarding _____

80. Again in your judgment, does this sitter appear to feel that this position is (please check one):

- Relatively routine _____ (1)
- Opportunity to be creative _____ (2)

81. In an average week, how many days is the child in the sitter's home? (where applicable) _____

82. On an average day, how many hours is the child in the sitter's home? (where applicable) _____

83. How many months has the child been in regular attendance in the sitter's home? (where applicable) _____



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