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ABSTRACT

The New Orleans Parent Child Development Center Intervention Model hypothesizes a series of effects: the Child Development and Family Life Educators impart curricula designed to change mother's attitudes and behavior toward her child in ways which should encourage the development of competence in the child. The two single most important types of measures of program effectiveness are the mother-child interaction observations and the measures of child development. The New Orleans Parent Child Development Center, as a research and development undertaking, is unique in several ways: (1) Basic research is conducted as regards changes in mother's behavior. (2) Such changes are compared to repeated measurements of infants' development. (3) Both of the above unique research efforts are used to evaluate a longitudinal intervention program. At the end of two years, there was meaningful advance by the center group infants relative to the serial control infants on four of five subscales of the Uzgiris-Hunt and on the Motor Scale of the Bayley administered at 19 and 25 months of age. These data are contrary to the bulk of previous literature. These significant findings of program effect do not result from group differences in socioeconomic status, basic mother's characteristics, or from differential attrition. (Author/JM)

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SUMMARY OF RESEARCH FINDINGS

OF THE

NEW ORLEANS PARENT-CHILD DEVELOPMENT CENTER

FEBRUARY 4, 1974

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ABSTRACT

The New Orleans Parent Child Development Center Intervention Model hypothesizes a series of effects: the Child Development and Family Life Educators impart curricula designed to change mother's attitudes and behavior toward her child in ways which should encourage the development of competence in the child.

The two single most important types of measures of program effectiveness are the mother-child interaction observations, and the measures of child development (Uzgiris-Hunt Scales and The Bayley Scales of Infant Development).

The New Orleans Parent Child Development Center, as a Research and Development undertaking, is unique in several ways:

1. Basic research is conducted as regards changes in mothers' behavior.
2. Such changes are compared to repeated measure of infants' development.
3. Both of the above unique research efforts are used to evaluate a longitudinal intervention program.

It was predicted that the first evidence of program effectiveness would be changes in the mother-child interactions such that with increasing age of the child and time his mother is in the program, the experimental mothers would spend a greater percentage of their time in cognitively "optimal" behavior with their children than control mothers. Most variables now analyzed show a very strong and positive program effect on the Center mothers' behavior toward their children. In the first Wave, experimental mothers were significantly better than controls by 22 months of age. The Wave III experimental mothers begin to show significant differences from the Controls as early as 12 months of age. We believe this to be the result of improved staff experience and training and Center operation.

The ultimate evidence of the program effectiveness would be higher scores on measures of competence for the experimental children than for the control children. Conceptually, the New Orleans Parent Child Development Center Model does not expect differences in child outcome measures to be as strong at the end of 2 years as they will be after 3 years of program intervention or subsequent follow-up. The main reason for this is that the mother is truly the primary change agent for the child. She must change before the child can change

or benefit from the program. There is no short-term day care effect in our model. At the end of two years, there was meaningful advance by the Center group infants relative to the Serial Control infants on 4 of 5 subscales of the Uzgiris-Hunt and on the Motor Scale of the Bayley administered at 19 and 25 months of age. These data are contrary to the bulk of previous literature which show a gradual decline in test behavior designed to measure competence (for poverty children) after the first year of life.

These significant findings of program effect appear convincing. They do not result from group differences in socio-economic status (SES), basic mothers' characteristics such as verbal skills or feelings of self-evaluation, or from differential attrition. Mothers were administered a battery of tests measuring verbal IQ, personality attributes, need for achievement, and attitudes toward education. There were no group differences between the Center groups or control groups on IQ, basic demographic characteristics, or attitudes toward education. The Center group mothers showed a slight trend toward being more "depressed" and having lower Achievement needs than the control mothers. These data suggest that our obtained results are an underestimate of our program's effectiveness.

PARENT DEVELOPMENT CENTER STAFF

NAME	POSITION
1. Anderson, Audrey	Family Educator Specialist III
2. Anderson, Pamela	Family Educator Entry
3. Andrews, Susan R. (Ph.D.)	Evaluation Coordinator
4. Bache, William L., III	Research System Analyst
5. Bates, Yolander	Psychological Tester I
6. Boudioun, Bertrand	Multi-purpose worker-Chauffeur
7. Bruno, Edna	Family Educator Entry
8. Bullock, Linda	Family Life Educator III
9. Butler, Doretha	Psychological Tester I
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11. Carter, Lucille	Family Educator Specialist I
12. Crawford, William	Multi-purpose worker-Chauffeur
13. Curry, Joseph	Program Logistic Coordinator
14. Davis, Lucille	Family Educator Entry
15. Davis, Dianne M.	Secretary
16. Dwelley, Mary R.	Assistant Curriculum Coordinator
17. Edwards, Hattie	Family Educator Entry
18. Elly, Portia	Psychological Tester I
19. Gair, Amy	Home Visit Driver
20. Graham, Loretta S.	Executive Secretary

(continue)

	Supporting Schedule
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22. Gross, Betty W.	Family Educator Entry
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24. Hayes, Olivia	Family Educator Specialist III
25. Jackson, Brenda	Family Educator II
26. Jefferson, Lillian	Psychological Tester III
27. Jenkins, Pernella	Family Educator Specialist III
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29. Ledet, Louise	Family Educator Specialist III
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35. Myles, Rose M.	Family Educator I
36. Parker, Joan	Health Coordinator
37. Patterson, Linda (Tyler)	Family Educator I
38. Porter, Glenda	Research Secretary
39. Rabinowitz, Melba	Curriculum Specialist
40. Randall, Ester	Family Educator Specialist III
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(continue)

Supporting Schedule

42. Robinson, Margie	Family Educator Specialist II
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44. St. Amand, Gailene	Family Educator Entry
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46. Turner, Sharon	Family Life Curriculum Coordinator
47. Warrick, Lovey	Family Educator Specialist II
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49. Wappas, Beryl S.	Secretary
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51. Williams, Joyce	Family Educator I
52. Williams, Ranell	Psychological Tester I
53. Wiener, Gerald (Ph.D.)	Research Director
54. Wilson, Katie	Family Educator III
55. Wise, Patricia	Family Educator Entry
56. Young, Evelyn	Administrative Secretary
57. Zeno, Tonya W.	Social Service Coordinator

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INTRODUCTION

The New Orleans Parent and Child Development Center (NOPCDC) is an attempt to increase low income mothers' competence in raising their children. Hopefully, this program of intervention will positively affect the course of their children's development.

Research Design

The structure and status of our research design can be seen in Table D-1. From the information provided in this Table, we estimate that we will have complete data for three waves of mothers and infants by December, 1975. The first of these is our pilot wave, about which this report is largely concerned. The pilot wave consists of four groups of mothers:

(1) The Center group comes to our center twice a week to participate in our intervention program. This program includes information about child development, as well as other activities designed to increase competence in various aspects of family life. These include health, nutrition, cultural activities, home economics, etc.

(2) The Home Visit group does not come to the center, except for evaluation purposes and health care which is available to all participants, including comparison groups. They receive information regarding child development twice each week from a home visitor.

(3) The Serial Control groups, comparison group of mothers and infants, comes to the Center only for health care and periodic testing, but does not participate in our intervention program. The Center mothers, Home Visit mothers, and Serial Control comparison group return to the Center for testing approximately every two months under identical testing schedules.

(4) Because the testing sessions are so frequent and so intensive, it is a possibility that the testing itself might have an effect. To evaluate this, it was considered desirable to include a group of mothers who come but once a year for evaluation purposes. This group is called the Yearly Control group. The Pilot wave of infants was approximately 26 months of age as of the time data were analyzed (January, 1974). They and their mothers had been in the program for 24 months.

Perhaps this implies a word of caution. The pilot group of mothers and infants had to suffer through an administrative, educational and research staff who were relatively less prepared than at the current time to manage a complex psycho-educational research and development effort.

Table D-1 indicates that a second wave of infants was admitted to the Center and Home Visit programs at about one year of age. These infants had been seen from age 2 months until 12 months for serial testing, i.e., every two months before they entered the intervention programs.

Our third wave of mothers and infants were recruited when infants were two months of age. This is a replication of our pilot group and was added because it was felt that our staff, including the administrative staff, were better trained and, therefore, considerably more capable of providing a test of our eductional intervention. The third wave includes a Center group, a Home Visit group, and a new Serial Control group.

The design of the New Orleans Parent Child Development Center (as shown in Table D-1) is an attempt to gain information regarding two major problems. The first of these is whether parent information and education (as an intervention) ought to begin at birth or at a later time in order to be optimally "successful."* Perhaps, it is possible and feasible to achieve equivalent results with mothers whose infants are older; in our case, one year of age. The nature of our evaluation design is also crucial in that it is an attempt to assess two "delivery systems," in the public health sense of the term: The Center-based program vs. a less expensive, logistically simpler Home Visit program.

Analytic Strategy

The current analysis is based upon the comparison of our pilot wave and our replication wave (Wave III), for the Center, the Serial Control, and Yearly Control groups.

*Successful is a word which is in quotation marks because our definitions for success are admittedly operational and arbitrary. They refer to social and cognitive competence.

Time considerations, and theoretic reasons dictated the selection of these groups for analysis. The theoretic reasons are:

1. Programmatic effects should be greater for Center groups than Home Visit groups.* The change literature is consistent in indicating that attitude change is facilitated by group processes, rather than individual instructional methods.
2. The pilot group should, by this time, show changes in mothers' attitudes and possibly developmental changes in infants.
3. The repetition of the pilot groups' experiences as in Wave 3, would serve to partially confirm data regarding model effectiveness.
4. Until recently, "quality control" for home visit groups was not available. This is now being accomplished by requiring routine "quizzes" of home visit mothers' new knowledge.

Table D-2 presents the projected N's for the groups we are analyzing and for a new wave (Wave IV) scheduled for recruitment in September of 1974. It should be noted that the group N's presented in the table do not reflect N's actually available for analysis, due to the problem of missing data. "Usable N" is an especially difficult problem with respect to multivariate analyses and repeated-measures analyses.

Table D-3 indicates which tests are given to children in Waves I and III

*We have some very preliminary data regarding the pilot wave Home Visit infants and these will be presented briefly.

at specific ages. The test numbers used in this table are identified in Table D-4. Because of the amount of data requiring processing, we chose to analyze only the following measures for this report.

1. Measures related to mother's characteristics.
   (a) Socio-economic status (including measures of mothers psycho-social status as will be discussed below).
   (b) Mother's Self Evaluation scale.
   (c) The Educational Attitude Survey
   (d) Mother's verbal skills. (Taken from the Comprehension, Similarities, and Vocabulary sub-tests of the Wechsler Adult Intelligence Scales).
2. Outcome Measures:
   (a) Mother-child unstructured interactions obtained in the PCDC laboratory.
   (b) Mother-child unstructured interactions obtained in the home.
   (c) Uzgiris-Hunt Scales of Infant Development.
   (d) Bayley Scales of Infant Development

Copies of the scales used in collecting data for these tests are included in Appendix A.

Data Processing

A few comments are in order regarding the process by which data finds its way from the tester's collection forms to the computer tapes which hold the

Master Data File (MDF) and the part which automated data processing plays in the process. At the time the raw data is collected, the tester completes an identification field which includes case, group, test used, wave number, sex, age at testing, tester number, observer's number, test month and the test data. If this test is for a reliability analyses, an additional code is used. For many of the tests, the initial data-recoding form serves as the form used by keypunchers to produce verified card records of the data. For a few tests, such as the Uzgiris-Hunt, the item data must be scored by hand, and a key-punchable data form is produced by the scorer, who adds her scorer number to the identification field.

At the end of each week, the data cards which have been keypunched from that week's testing are processed. The cards are sorted by test number, and a single computer program (SCORE) processes the data for each test. Output from SCORE consists of a set of one or more cards for each test given to each person. These processed-data cards contain the original identification field (as transferred from the raw-data cards) and the test scores. (For some tests, relevant item data is also transferred to these cards).

The processed-data cards are then ready for addition to the MDF by the program EDITOR. EDITOR is a comprehensive data management program written specifically for the several NOPCDC data files. It can be used to (1) Add a new set of cards to every case in a file, as when a new test is added to the schedules, (2) Replace obsolete or erroneous cards in a file with current cards, (3) Insert individual cards into a file, (4) Delete cards

from a file, and (5) Print and/or punch selected cards in a file.

The NOPCDC Data Files

(1) The Raw-Data File. After raw-data cards have been processed by SCORE, they are added to the end of the raw-data tape file. Periodically, the data on this tape is sorted, so that the data is arranged casewise, by test number within cases, by test month within tests, and by card number within test month.

(2) The Short MDF. Another tape file contains the processed-data cards produced by SCORE, but with incomplete case records. Missing from each case record are blank ID-field-only cards for data not yet collected for that case. Hence, records in the short MDF may contain a different number of cards for each case.

(3) The Complete MDF. This file is the core of the data storage system at the NOPCDC. It contains, for each case, all the processed-data cards ever produced for that case and all missing-data cards required to complete the case record. A missing-data card is inoluded for each processed-data card which is not present in the file. Hence, each case record contains a complete set of cards for all tests which are scheduled for administration between 2 months and 3 years of age. As data is collected on a child, EDITOR is used to replace missing-data cards with processed-data cards.

(4) Finally, various statistical library files are maintained which permit rapid analysis of all or part of the MDF without the necessity of actually reading the MDF each time an analysis is performed. These files are the core of the data analysis system at the NOPCDC.

The MDF has only recently been compiled and made operational. It is expected that with periodic maintenance of the MDF and the statistical library files, the efficiency and speed of future data analysis will be greatly increased. (Appendix C contains a detailed description of all data cards and data files in use.)

Model Feasibility

Before beginning a description of the program, which will include a description of our intervention program and a resume of our evaluation efforts, it is necessary to report about the practicality of the model as such. One manner of measuring a model's feasibility is to note the results of our recruitment efforts. These have been fully described and documented in previous progress reports. Approximately one-third of those approached for inclusion in our Center and Home Visit program accepted our approach and became program participants.

We are very much interested in reasons for non-participation. These vary and for the most part consist of intention of returning to work or returning to school. There are, fortunately, few instances of refusal to participate because of hostility towards our program and its implications. This last point is all important because our participants are inner-city residents who are

below the poverty level. They are, defacto, black.

It is possible that a model based upon evening or weekend scheduling would be attractive for many.* For those who do not participate because of a desire to further their education, one readily thinks of the school curricula including some of the concepts which we try to introduce in our FCDC center. Attrition rates are less than 30% after 16 months of program operation and about 50% for some groups after two years.** Reasons for dropping from our program primarily involve disinterest and return to work.

Case Selection.

We pre-selected for inclusion into our study only those infants who were not premature, did not have congenital defects, and those mothers who did not have major complications of pregnancy or labor. Further, we excluded mothers who were less than 17 years of age, and also mothers who had more than five (5) siblings. To the extent that mothers were black, had infants who were biologically healthy (as far as medical records would predict) and who lived within the same area of New Orleans, we felt that we were dealing with a fairly homogenous group. Thus, our experimental and comparison group pilot wave of mothers should be quite equivalent, even though we did not randomly assign the pilot wave. Nevertheless, the pilot wave groups were not

*We have never recruited a wave of mothers for whom stipends were available as an alternative to domestic work, for example. The addition of stipends should enhance recruiting efforts for Wave IV.

**Since stipends have been added, there have been few drops.

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different as regards age, marital status, number of children, nature of residence, education, need for welfare assistance, and other such demographic variables. Previous progress reports and newly obtained data to be presented speak to this point. Subsequent waves were randomly recruited and assigned.

Education of Mothers

Staff educators are nonprofessional workers who have been trained by the Center's supervisory staff. Much of this training was in conjunction with a local college and carried college credit. Curricula manuals have been prepared for much of our training program. These materials are being made available as they are developed. The curricula for the first year of life have been prepared by the educators and the supervisory educational staff. This served the purpose of both training the educators for their task of teaching, as well as providing a record of the educational activity of our center. We felt that by helping to write this daily curricula, the educators would not only remember fact about child development, and daily activities to be utilized, but would understand and impart the theoretic underpinning of child development.

Curricula

The following curriculum materials have been prepared (or are in various stages of preparation).

1. "In the Beginning" - An infant (birth to 6 months) development curriculum. This is completed.
2. Teacher's guide for 'In the Beginning." Completed.

3. "Explorer." Educator's and mother curriculum for 6-12 months. Completed.

4. Teacher's guide to the Explorer. Projected completion date March 1974. Draft now available.

5. Health Curriculum and Training Manual for use by educators. Completed and final drafts will be available by February 15, 1974.

6. Social Service Curriculum and Training Manual for this curriculum. First draft will be available March 15, 1974.

7. First draft of the Toddler Curricula for the years 1-3 have been prepared. Scheduled revisions of these curricula will be available June 1, 1974. Initial drafts are now available.

8. "Baby Book" for mothers to chart infants development. Completed.

9. Curriculum for Family Life Education, including training for home-making skills, and education aimed to increase competence and provide a sense of self worth. The preparation of this curriculum has just begun and no deadline for completion has been set. However, education for Family Life has been an ongoing process.

Description of the Model

Initially we conceived the NOPCDC model to be a "competence" model for mothers. Competence may be described as (and may be synonomous with) a problem-solving model. In general we feel that mothers who are brought to feel they can cope with life's many problems and who have been given pride in their capability and heritage will be able to benefit from child development education. This feeling of competence about oneself should improve

and perhaps precede a capacity to learn from child development education and to change attitudes in the direction of our educational efforts. Distinguishing features of the NOPCDC educational program are that curricula have been developed completely by the Center's staff and that the educational work is largely accomplished by non-professional educators who have been trained by the Center (using local junior college facilities for accreditation).

The underlying theory for our child development curriculum is eclectic. As could be noted from previous progress reports we drew upon Piaget's theory of cognitive development, social learning theory ala Skinner and Bandura (reinforcement and modeling), the linguistic work of Hess, Shipman, Basil Bernstein, and Courtney Cazden, and the psychiatric theories of Freud and, particularly, Erickson.

The education model consists of fairly formal didactic teaching sessions focused on learning processes such as the necessity of discrete stimuli for building attention, reinforcement, curiosity, limitation, and attachment and trust. Using these concepts as learning emphases, the educator builds specific practical demonstrations relating to child management such as how the mothers can use reinforcement to build language and behavior; how the curiosity drive manifests itself in the form of a young "scientist" using his home as his laboratory; and how the home environment can facilitate the development of stages of attachment and trust. We deal with specific daily management issues such as leaving baby with strangers, and using fear ("I'm gonna get the doctor to give you a shot") as a way for controlling behavior.

Daily caretaking such as feeding, diapering and bathing are included regularly for younger infants under each learning emphasis, as are health and safety precautions. However, teaching focuses on using these experiences to enhance curiosity and language development and on how the mother can use reinforcement and imitation as her ally in developing the infant's skills.

The New Orleans Model for Infant Education is perhaps unique in its attempt to deal with a broad base of child development management information as well as language and cognitive development. Other models focus more directly on cognitive and language-type interventions with the mother. This difference in educational emphasis should be of future interest.

Two of the underlying themes that are taught in many ways, many times each week are: the parent is now and will be the child's most important teacher (transmitter of attitudes, values and skills); all the baby's time is learning time (everything the parent does with the baby can make the difference, can aid or hinder his development).

The method of teaching includes field trips with infants and mothers to the grocery store, parks, and the department store to buy books for baby and role playing as well as many demonstrations of infant's responses to various activities involving cleanliness and safety.

For older infants, age 1-3, instructional materials are increasingly concerned with the mothers' needs for an older child and for understanding and management of toddler behavior. We should repeat that our entire curriculum has been focused on providing mothers with insights into child

into child development, rather than concrete rote utilization of "stimulating" devices or behavior. Increasingly, as the child grows older, modeling and infant demonstration are less frequent. Mothers are educated (for the 2-3 year olds) in a room apart from their children; the children receive non-educational care while mothers are in an education session. Center group mothers and infants come to the center twice a week for two hours in order to receive instruction. Home Visit mothers are seen by an educator two times a week for an hour.

The strength of our intervention is reflected by attendance records. Approximately 50 to 60 percent of the scheduled visits in the Center and in our Home Visit program were kept prior to the introduction of stipends. We had hoped that attendance would be of the order of 80% and it is our intention to utilize data from this pilot year experience to enhance our parents' attendance. Since we added a stipend system (October 1, 1973), under which mothers receive $5.00 for each session attended, attendance is now 85% for all groups. We recognize that stipends, while desirable, are nonetheless small and, presumably, would be ineffective without intrinsic motivation for attendance based upon the desirability of our educational efforts.

Analytic Strategy

For the current analyses, Wave 1 (pilot wave) and Wave 3 experimental and control groups were compared as regards the mother-child outcome measures and final impact measures (Uzgiris-Hunt and Bayley Scales of Child Development). (Appendices A + B contain a complete set of the tests

and scales used to evaluate the program). In addition, we demonstrate that our findings are not due to SES factors associated with initial recruitment or with differential drop-out characteristic of experimental and control cases. With the exception of the differential attrition analysis, none of the group means and tests of significance reported in later sections of this report include data from those subjects which were dropped at any time prior to November of 1973. Data on most measures for dropped mothers and children are available up to the time of their termination.

We are ready to undertake immediately a more sophisticated analysis which will in some ways be a basic psychological experiment. This will consist of a correlational analysis equating individual mothers' changes in child practices with changes in their infants' development. Such data will enable us to definitively test the PCDC model, as well as note precisely which specific child rearing attributes are correlated with specific developmental changes (while controlling for mothers' SES and personal attributes). Such data are unavailable in the general body of psychological literature. The results to be presented at this time provide strong evidence that our later analyses will be fruitful.

General Statement of Hypotheses

In general, we hypothesize that:

(1) Center mothers in the pilot wave should show changes in child rearing behavior by 22 months of infants age (20 months of intervention).

(2) Whatever changes are discerned in the pilot wave should be noted at an earlier age for Wave 3. Data from Wave 3 reflect a maximum of 10 months of intervention.

(3) We did not predict strong developmental changes in infants for the first 2 years in our pilot wave due to that fact that intervention target was exclusively the mother. According to our model, the mother must change before she can become an agent of change to the child. In general, child changes should begin to emerge after intervention results in changes in the mother. The literature, for the most part, indicates that children's test scores are not predictions of future development until a child is about 2½ years of age.

In the sections to follow specific hypothesis will be listed proximal to the data being analyzed.

TABLE D-1

New Orleans PCDC Experimental Design

		Present N*	Infant Age at Recruiting	Infant Age on Entering Program	Mean Age as of Dec. 1, 1973
Pilot Wave (Wave I)					
(C)	Center	18	2 mos.	2 mos.	28 Months
(HV)	Home Visit**	15	2 mos.	2 mos.	26 Months
(SC)	Serial Control	20	2 mos.	2 mos.	26 Months
(YC)	Yearly Control	19	2 mos.	2 mos.	26 Months
(C-I)	Center-I** (Wave 2)	20	2 mos.	2 mos.	22 Months
(HV-I)	Home Visit-I (Wave 2)	15	2 mos.	2 mos.	22 Months
Experimental Wave-Wave-III					
(C-II)	Center-II	32	2 mos.	2 mos.	12 Months
(HV-II)	Home-Visit-II**	25	2 mos.	2 mos.	12 Months
(SC-II)	Serial Control-II	33	2 mos.	2 mos.	12 Months

*Approximate N; does not reflect size of group at recruitment, before attrition.

**Data from these groups were not thoroughly analyzed for January 15. Partly due to time limitations, and partly because of theoretical reasons for presuming an effect at a later date.

Table D-2

		Jan., '74 Present N (Age)		Projected for Sept., '74 N (Age)	Projected for Sept., '75 N (Age)
Pilot Wave (Wave I)					
(C)	Center	18	(2 y, 3m)	16 (3 years)	Graduated
(SC)	Serial Control	20	(2 y, 3m)	18 (3 years)	Graduated
(YC)	Yearly Control	19	(2 y, 3m)	17 (3 years)	Graduated
		57		51	
First Experimental Wave (Wave-III)					
(C-II)	Center-II	32	(1 y, 3m)	29 (2 years)	26 (3 years)
(SC-II)	Serial Control II	33	(1 y, 3m)	30 (2 years)	27 (3 years)
		65		59	53
Second Experimental Wave (Wave-IV) ***					
(C-III)	Center-III	-		50 (2 mos.)	30 (1 years)
(SC-III)	Serial Control-III	-		50 (2 mos.)	30 (1 years)
(YC-III)	Yearly Control-III	-		50 (2 mos.)	30 (1 years)
				150	90
TOTAL N'S		122		260	143

***N's for this wave are based on recruitment Projected for Sept., 1974, and attrition by September, 1975.
The above data do not include Home Visit or Wave II groups.

Table D-3.

The testing Schedule for Wave I Mothers and Infants (Center, Home Visit and Serial Control groups). The Test Numbers can be found in Table D-4

Age of Child at Testing

	2 mo.	4 mo.	6 mo.	7 mo.	8 mo.	10 mo.	12 mo.	13 mo.
TEST NUMBERS	01 02 03 04 06 10 11 14	06 10 11	06 12	07	06 08 11	06 08 11	05 06 08 11 12 14	07

	14 mo.	16 mo.	18 mo.	19 mo.	20 mo.	22 mo.	24 mo.	25 mo.
TEST NUMBERS	06 08 11 (13)** (25) (32)	06 08 11	06 08 11 12 (13) 17 (25) (32)	07	06 08 11	06 08 09 11 (13) (32)	08 09 11 12 14 16 22 28 30 34 37 38	07

	26 mo.	28 mo.	30 mo.	36 mo.
TEST NUMBERS	08 11 (13) 26 27 (32)	08 09 11	08 11 12 26 27	08 09 11 12 (13)-(2) Visits 14 16 26 27 28 32 34 36 39

* Tests reported in this paper are shown in Appendix A.
Other test given, but not analyzed here are shown in Appendix B.

** Test numbers in parenthesis are administered at home.

Table D-3 (Cont.)

The Testing Schedules for Wave III Mothers and Infants

(Center-II, Serial Control-II groups).

Age of Child at Testing

2 mo.	4 mo.	6 mo.	7 mo.	8 mo.	10 mo.	12 mo.	13 mo.
01	(05)	06	07	06	06	06	07
02	06	11		08	08	08	
03	10	12		11	11	11	
04	11			(13)		12	
06	(13)			(32)		(13)	
10	15					14	
11	16					16	
14	(32)					22	
						28	
						30	
						(32)	
						34	
						37	
						38	

16 mo.	19 mo.	20 mo.	24 mo.	25 mo.
06	07	06	08	07
08		08	09	
11		11	11	
(13)		(13)	12	
(25)		17	(13)	(2 visits)
(32)		(25)	14	
		(32)	16	
			26	
			27	
			28	
			(32)	
			34	
			38	

Table D-3 (Cont.)

The Testing Schedule for Wave I Mothers and Infants

(Yearly Control Group).

Age of Child at Testing

	2 mo.	12 mo.	13 mo.	24 mo.	25 mo.
	01	05	07	08	07
	02	06		09	
TEST	03	08		11	
NUMBERS	04	11		12	
	14	12		(13)	
		14		14	
				16	
				22	
				26	
				27	
				28	
				30	
				(32)	
				34	
				35	
				37	
				38	

	36 mo.	
	08	
	09	
TEST	11	
NUMBERS	12	
	(13)	
	14	
	16	
	26	
	27	
	28	
	(32)	(2 visits)
	34	
	36	
	39	

Table D-4

CODE SHEET OF TEST NUMBERS

01	INITIAL INTERVIEW AND EXAMINATION (MEDICAL--FAMILY PLANNING)
02	NEWBORN AND PREMATURE REFERRAL FORM
03	INITIAL DATA FORM
04	SOCIO-ECONOMIC STATUS--OFFICE INTERVIEW
05	SOCIO-ECONOMIC STATUS--HOME INTERVIEW
06	UZGIRIS-HUNT SCALES OF INFANT ORDINAL DEVELOPMENT
07	BAYLEY SCALES OF INFANT DEVELOPMENT
08	INFANT PERSONALITY RATING SCALES (BIRN - GOLDEN)
09	PACIFIC TEST SERIES
10	PRIMITIVE INTENTIONALITY
11	UNSTRUCTURED INTERACTION
12	STRUCTURED TEACHING INTERACTION
13	HOME OBSERVATION
14	MOTHER'S SELF-EVALUATION SCALE
15	MOTHER'S VIEWPOINT SCALE
16	PSYCHOLOGICAL MINDEDNESS
17	PROBLEMS INVENTORY (STRESS SCALE)
~~18~~	
19	
20	PARENT REPORT FORM--PART A
21	PARENT REPORT FORM--PART B
22	PARENT BEHAVIOR INVENTORY
23	MULTIPLE AFFECT ADJECTIVE CHECK LIST
24	OBSERVATION OF EDUCATOR ROLE
25	MEYERS VOCABULARY TEST
26	AMMONS-FULL RANGE PICTURE VOCABULARY TEST
27	LANGUAGE ABILITIES GRAMMAR TEST
28	EDUCATIONAL ATTITUDE SURVEY
29	CENTER ATTENDANCE (9/71 -- 10/73)
30	WAIS
31	ATTENDANCE FORM (10/73 to present)
32	NICHD RATING SCALE - INTERACTION RATING SCALES
33	TEST ATTENDANCE
34	SOCIO-ECONOMIC-STATUS-II
35	INTERNAL-EXTERNAL LOCUS OF CONTROL
36	STANDORD-BINET
37	SOCIAL DESIRABILITY
38	MOTHER'S ATTITUDE TOWARD CHILD MASTERY BEHAVIOR
39	CONCEPT FAMILIARITY INDEX

DEMOGRAPHIC COMPARISON OF GROUPS

SES data was obtained by an initial interview (Tests 04 and 05). Selected variables were analyzed to compare groups initially, and after the first and second year attrition, to test for the possibility of differential dropout.

Tables S-1 and S-2 illustrate this method with data from the Center and Serial control groups (pilot wave) upon initial contact with the Center, and after the latest completed year of program participation. A significant attrition effect would be indicated by a difference between the results of the initial analysis and the final analysis.

We should note that the purpose of this comparison is not to describe the characteristics of drop-outs. Previous work did indicate that classical demographic indicators do not "predict" the mother who drops from our survey.

The form used to collect this demographic data was our initial SES form (Tests 04 and 05), given by the testers early in their training. Later, we will present data from the SES-II form (Test 34), which was obtained by a trained social worker during a home visit later in the intervention years.

As illustrated by Tables S-1 and S-2, there was no evidence of differential attrition in the Wave I groups. The comparions between the Center and Serial Control groups and the Center and Yearly Control groups on traditional demographic indicators of SES yielded no significant group differences either before or after removing the scores of the subjects who dropped out. The

attrition in Wave III after only one program year was too slight to be analyzed at this time.

Table S-1.

Attrition analysis: t-tests of demographic and SES variables from tests 04 and 05. Comparison of Center and Serial Control groups (pilot wave) initially and after removing those who dropped out during the first two years.[1]

	INITIAL MEANS: C	INITIAL MEANS: SC	MEANS AFTER REMOVING DROPS: C	MEANS AFTER REMOVING DROPS: SC
NO OF SIBLINGS	1.41	1.57	1.29	1.53
	T = -.40		T = -.46	
	DF = 48		DF = 34	
NO. OF OTHER CHILDREN[2]	.33	.65	.33	.68
	T = .89		T = .80	
	DF = 33.86		DF = 29.55	
NO. OF TOTAL CHILDREN	1.69	2.17	1.53	2.15
	T = 1.19		T = 1.23	
	DF = 51		DF = 37	
NO. OF ADULTS	.92	.71	1.88	.76
	T = .53		T = .75	
	DF = 40.41		DF = 21.16	
RENT[3]	3.57	3.78	3.47	3.67
	T = .45		T = -.35	
	DF = 39		DF = 28	

* P .10 **P .05 ***P .01

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[1]Where DF is not an integer an approximate t based on separate variances has been calculated, because of heterogeneous within-group variances.

[2]Excludes the target child, siblings, half-sibs, and foster sibs.

[3]Divided into 6 intervals, with "under $20/mo." = 1 and "over $891 mo." = 2.

Table S-2.

Attrition analysis: Demographic and SES variables from tests 04 and 05. Comparison of Center and Serial Control groups (pilot wave) initially and after removing those who dropped out during the first two years.

		INITIALLY		AFTER 2 YEARS	
		C	SC	C	SC
FATHER IS SOLE SUPPORTER?	NO	14	12	10	10
	YES	15	12	9	10
		$X^2 = .02$		$X^2 = .02$	
WELFARE SUPPORT RECEIVED?	NO	19	16	13	12
	YES	10	8	6	8
		$X^2 = .04$		$X^2 = .05$	
ANY OTHER BENEFITS?	YES	20	19	12	18
	NO	9	5	7	2
		$X^2 = .28$		$X^2 = 2.58^*$	
FOOD STAMPS?	NOT RECEIVED	17	13	13	10
	RECEIVED	12	11	6	10
		$X^2 = .00$		$X^2 = .71$	
FOOD SUPPLEMENT?	NOT RECEIVED	18	18	11	14
	RECEIVED	11	6	8	6
		$X^2 = .50$		$X^2 = .21$	

* P .10 ** P .05 *** P .01

ANALYSIS OF MOTHER'S ATTRIBUTES

A battery of interviews and paper and pencil tests were administered to the mothers in Wave I and Wave III and were designed to measure various personality characteristics and attributes. These measures include:

(1) The Self Evaluation Scale, (Test 14) administered to the mothers at 2, 12, and 24 months of the child's age such that amount of program experience was constant within Waves and between groups. The Self-Evaluation Scale is 16-item paper-and-pencil scale which asks the mother questions dealing with her feelings of self-worth and power over her environment.

(2) Mother's Verbal Skills, (Test 30) measured by 3 Verbal subtests of the Wechsler Adult Intelligence Scale (Comprehension, Similarities, Vocabulary), the second year of program intervention for Wave I and after one year for Wave III.

(3) The Problems Inventory, (Test 17) a scale administered by the Social Worker and her assistant to the Wave I mothers at 18 months of their child's age. This is an inventory of external stresses such as housing problems, welfare problems, etc., that might mitigate against the mother benefitting optimally from program participation.

(4) SES-II-Scale, (Test 34) a home interview given after 2 years of intervention for Wave I and one year for Wave III which includes

self-reports and ratings done by the Social Worker on:

(a) demographic characteristics

(b) education and work history

(c) achievement strivings of mother for child

(d) activities in outside organizations

(e) ratings on an eleven-item scale purporting to measure mother's withdrawal, apathy, or "depression."

There are two major reasons for this battery of "mother measures." One purpose is to note whether there are group differences (C vs SC; C vs YC) in those mothers for whom we have consistent longitudinal data. If so, these group differences would have to be adjusted by the appropriate statistical techniques, particularly if the experimental group appears advantaged (which is not the case with current waves).

Obviously, mothers differ in a wide variety of ways which might affect their child's development. Further, it is obvious that some mothers will benefit from the program to a greater degree than others. The second and major purpose of measures of mothers' attributes is to discern the characteristics of mothers who are benefitting from our model as it is now designed. Programatically, it is critical to know who will not benefit and the reasons for this. We would like to offer recommendations for replication based upon this information. We plan to define a multivariate profile of mother attributes which identifies mothers who change differentially as a result of program

participation. For the current summary of program effectiveness, this second analysis will not be presented: We will present here only group comparisons of mothers attributes and program effectiveness data.

The Problems (External Stress) Inventory

Here, stress is defined as a presence of external "real problems" relating to health, neighborhood, housing, insufficient food, etc. Table M-1 presents the mean stress index for the Center and the Serial Control cases.

Apparently on an overall basis, the two groups do not differ as regards external stressful situations, despite the fact that the Center group has had access to social services and should have less extent problem areas. Not shown is the fact that the Center, compared to the Serial Control group reports significantly fewer food, clothing and furniture problems than the control group ($F=10.0$, $p=.003$). This finding when reviewed with the SES-II survey to be reported later, would indicate the following conclusions: the Center mothers do not differ from Controls on pure economic-demographic variables (income, housing, quality of furniture, family size, marital status, etc.). The fact that they report fewer problems as regards food, clothing and furniture in all likelihood reflects the fact that Center mothers have had access to a social worker for the past two years. In part, the social worker function is to deal with individuals' food and housing problems and make available referral to appropriate services where this is indicated.

Self Evaluation Scale

This consists of 16-item scale which was culled in part from the Rotter

Scale of Internal-External Locus of Control and augmented with other items designed to load on self-concept.

Tables M-2, and M-3 contain the group means and F-values for Wave I and Wave III. This measure does not differentiate between the groups at any point in time. By inspection, the groups are not changing differentially over time.

Verbal Skills Scale

This scale was composed of the Comprehension subtest ("Why should people pay taxes?"), the Similarities subtest (abstract reasoning-"How are an ax and a saw alike?"), and the Vocabulary subtest of the Wechsler Adult Intelligence Test. These scores were added to provide a summary score. The purpose of administering this scale was that verbal mothers provide a verbal environment, and any group differences along this dimension rather than our intervention, might produce experimental effects similar to those expected as a result of intervention.

Results can be simply summarized (see Table M-4): for none of the pilot wave and Wave 3 groups, and for none of the 3 subtests or total score, were there any differences. Scores were almost identical.

Social-Psychological and Demographic Analysis of Mothers (SES-II)

Wave I (pilot wave)

Analysis of the initial SES scale administered at entrance into program, indicated that Center mothers were not significantly different from other mothers

as regards characteristic demographic variables (income, housing, marital status, etc). Despite this finding, the paraprofessional testers, the Center nurse and social workers reported control mothers to be "different" in ways such as to enhance infant development. Data* in the tables to follow (M-5 and M-6) confirm both of the above impressions. The findings are:

(1) There are no gross SES or demographic differences between groups (except that the Yearly Control group has significantly greater income and tends not to live in public housing.)

(2) The Center group compared to the Serial Control group has

a. Less education and a lower level of work.

b. Lower achievement strivings for her child.

c. A greater degree of withdrawal and depressed appearance (as this was rated by the Center's social worker on an 11 item scale).

(3) The Center group; compared to the Yearly control group has:

a. Less education and work record.

b. Lower achievement strivings for her child.

c. Less involvement in outside activities.

d. A greater degree of withdrawal and depressed appearance.

Considering this information, one would expect that outcome measures (mother-child interaction and child development) would favor the control

*These data were recently collected by a trained social worker, and we feel they are more reliable than initial data.

children, or if outcome measures favor the Center children (as is later shown to be the case), the true magnitude of the program has been underestimated.

Wave 3

Similar data are presented for the Wave 3--which was randomly selected. We can note from the data in the Table M-6 that the Center group is significantly less poor than the serial control group. We would not expect this to be reflected in outcome measures until 24 months of age or later. At that point, this factor will have to be considered in understanding future results. It is difficult to explain why a homogenous sample (poor, black, inner city, medically indigent) which was randomly selected should show such effects - Perhaps we should add that for a small N study, random selection does not always ensure equivalent groups. In any event, randomization of initial cases does not ensure that differential attrition will not produce group difference at some later point in time.

It has been the experience of many researchers that poverty per se is not the only constituent of social class. Mothers' values, achievement needs, and personal characteristics (particularly education and verbal skills) are better predictors of their infants' development, and on these variables the Center and Serial Control Wave 3 groups are not significantly different.

Table M-1

External Stress (Problem) Scale

	Center	Serial Control
M	43.1	48.4
S.D.	25.0	29.4
N	17	19

$F = .32$, $p = .57$ (Not significant)

Table M-2

Means and F-Values for Wave I (Center, Serial Control and Yearly Control) on the Self-Evaluation Scale.

2 Month Administration

	Center	Serial Control	Yearly Control
Mean Score	47	42	42
N	13	15	15
F	F = 1.40, p = .26 (Not significant)		

12 Month Administration

Mean	47	46	44
N	17	19	18
	F = .33, p = .72 (Not significant)		

24 Month Administration

Mean	47	46	45
N	14	16	16
	F = .33, p = .80 (Not significant)		

Conclusion: There are no group differences, at any point in time between groups. By inspection, for the cases included in this analysis, groups did not change (on the average) in a significant fashion.

* High Score is a "better" feeling about ones self. Scale includes items such as: "Others have a better future than me," or "I am not well liked."

Table M-3.

Means and F-Values for Wave III (Center-II and Serial Control-II) on the Self-Evaluation Scale.

2 Month Administration

	Center	Serial Control
Mean	44	46
N	14	26

F = .30, p = .58 (Not significant)

12 Month Administration

Mean	47	47
N	19	27

F = .05, p = .81 (Not significant)

Table M-4.

Total Verbal Skills Scores by Wave and Group

Pilot Wave

	Center	Serial Control	Yearly Control
Mean	23	22	21
SD	2.5	5.8	6.5
N	11	13	12

Wave 3

	Center II	Serial Control II
Mean	22	23
SD	5.9	8.2
N	16	16

NOTE: The above scores are not IQ's but are correlated with IQ.

By inspection none of the differences between groups was significant. Each of the three subtests would have produced parallel tables.

Table M-5.

Social-Psychological Analysis of Mothers Characteristics for Wave I and 2 Years of Program Intervention. (SES-II)

				Significance		
	Center	Serial Control	Yearly Control	C-SC	C-YC	SC-YC
I	Demographic Analysis of Economic Status: e.g. income, housing					
Mean	32.0	27.7	30.1	n.s.	n.s.	.11
N	15	19	17			
II	Mothers Education and Work History					
Mean	18.5	20.1	19.8			
N	15	19	17	.07	.04	n.s.
III	Achievement Strivings for Child					
Mean	29.5	34.7	33.1	.04	.05	n.s.
N	15	19	17			
IV	Mothers Need for Achievement for Self					
Mean	11.7	11.8	11.4			
N	15	19	17	n.s.	n.s.	n.s.
V	Mothers Activities in Organizations: Outside Interest					
Mean	10.7	10.8	12.5	n.s.	.02	.03
VI	Mothers Personality Characteristics Depressed, withdrawn vs Active going					
Mean	51.3	55.9	54.5	.03	.03	n.s.
N	15	19	19	.03	.03	n.s.

* Higher scores indicate "better" characteristics. Within the economic Index I, Yearly control mothers had higher income levels than other groups. The Yearly control mothers also significantly did not live in public housing.

Table M-6.

Social-Psychological Analysis of Wave 3 Mothers after One Year of Program Intervention (SES-II).

		Center	Serial Control	p
I	Demographic Analysis of Economic Status			
	Mean	37.0*	33.1	.004
	N	23	16	
II	Mothers Education and Work History			
	Mean	19.3	22.3	.20
III	Achievement Strivings for Child			
	Mean	35.7	37.7	n.s.
	N	23	16	
IV	Mothers Achievement in Outside Activities, Interest			
	Mean	11.6	11.6	n.s.
	N	23	16	
V	Mothers Personality Characteristics: Depressed, withdrawn vs Outgoing, Active			
	Mean	53.8	56.5	n.s.
	N	23	16	

* Higher scores suggest better status.

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OUTCOME MEASURES: MOTHER-CHILD INTERACTIONS

Description of Measures

The primary purpose of the Parent Child Development Center is to teach effective methods of interacting with their children, in order, ultimately, to affect the child's competence. Therefore, we feel that measurements of actual interaction behavior between the mother and the child should be the principal outcome measure to be presented at this stage of our research. Program mothers are expected to demonstrate more of those interaction techniques and behaviors with their children which have been demonstrated and discussed in the curricula than the control mothers.

Two different measures of mother-child interaction behavior have been used for the current analyses: a six minute Center observation (Test 11) and a thirty minute home observation (Test 13).

The six minute Center observation is an unstructured, "waiting room" type of observation. Every two months, beginning at age 2 months, testing is interrupted and both mother and child are left alone in the testing room. An observer behind a two-way mirror views and tape records -- a running record of the mother and child behavior which takes place during these 6 minutes.[1] The six minute Center observation at ages 4, 12, and 22 months were selected

[1] The two-way mirror and sound system is demonstrated at an initial "orientation" session. The mother knows that observers are present for the testing sessions, but she is not told that we are specifically interested in her behavior toward her child.

for the current analysis from the total set of observations in order to maximize the available N. The analysis includes only those cases for whom data were available at each of these three observation occasions.

The 30 minute home observation is recorded by a trained observer who makes a running record into a tape recorder. Over a period of one hour, the observer utilizes alternate 10 minute record/no record periods for a total actual observation time of 30 minutes. A home observation is made once every 4 months. They were begun at 12 months of age for Wave I, and at 4 months of age for Wave 3. The 24-28 month Wave I home observations were selected for the current analysis.

The two types of observation situations each have advantages and disadvantages. The chief advantage of the Center observation is that it is a tightly controlled, identical situation and environment for all children and mothers. However, it is also an ecologically artifical situation. The home observation is obviously the more natural ecological setting in which to measure actual program impact of mother's behavior toward her child. It is also, however, a setting which is obviously inconsistent from home to home. By scoring both situations and from one situation to the next we hope to gain information which each setting has to offer.

Interaction Variables Coded

Five dimensions of Mother-Child interaction behavior were coded and analyzed for this report.* The variables include: (1) Global ratings of three

*An additional set of variables concerning child experiences and mother's technique which were developed by Dr. Jean Watts (Harvard Preschool Project, 1973), were coded. However, the analyses of these variables are not complete at this time. Also available will be data from a series of ratings done after each home visit.

dimensions of "good-mothering" (Ainsworth, 1970); (2) The type of mother's participation with the child; (3) The amount of language the mother produces during the observation; (4) The general style of mother's language, and (5) The functional use of the mother's language. A sixth dimension - the mean length of the mother's utterances - is in the process of being scored and analyzed.

I. Global Ratings of "Good Mothering"

Recent developmental research converges on a set of global "good mothering" variables which seem to be critical for later child competence. We have utilized for our analyses Mary Ainsworth's formulation of those mother-related variables which she found to be significantly correlated with later child intelligence and competence (Ainsworth, Child Development, 1970). There are three dimensions rated on a 5-point scale (1,3,5,7,9) on the basis of the general feeling tone of the entire observation protocol.

(1) Sensitivity-Insensitivity. A sensitive mother is "tuned in" to her baby. She can see things from the child's point of view, is aware of the child's signals, interprets them accurately, and responds to them promptly and appropriately. The insensitive mother, on the other hand, is prompted by her own needs, and her actions to the child are rarely contingent on the child's needs.

Hypothesis: Center mothers will become more sensitive to their children over time than Social Control mothers. Control mothers will become more insensitive as their

children get older due to the increasing ability of the child to express his own needs and wishes. No differences were predicted between groups at 4 months of age.

(2) Acceptance-Rejection. An accepting mother feels basically positive about her child, and about her responsibility in caring for her child. A rejecting mother may have some positive feelings, but frequently is overwhelmed by resentment, anger, and hostility.

Hypothesis: Center mothers will become more accepting than Serial Control mothers, as their experience in the program increases. No differences between groups were predicted at 4 months.

(3) Cooperation-Interference. A cooperative mother respects her child's own desires and needs. She minimizes the need to control her child. When control is necessary, she tries to make it as congenial for the child as possible. An interferring mother, on the other hand, does not consider the validity of the baby's own needs and desires.

Hypothesis: Center mothers will become more cooperative than Serial Control mothers as the program progresses. Serial Control mothers will evidence increasing interference with the child's goals and tasks as he becomes older. No differences were predicted at 4 months of age.

II. Type of Participation Between Mother and Child

Our Curriculum Model emphasizes the importance of a mother actively participating in her child's activity. Dr. Jean Watts found in the Harvard Preschool Project that mothers with the most competent children spend a larger percentage of their interactive time working directly with their child in the child's activity, for example, getting down on the floor and stacking blocks with the child, teaching by demonstration, and playing the child's game. The level or type of participation variable which we evolved was based on the mother's increasing "distance" from this ideal level of participation. (In this usage, "distance" does not necessarily mean physical distance, but more aptly, a psychological distance.) The mother's participation can range from active participation through general conversation; positive control where the mother initiates or redirects the child behavior by commands, suggestions, questions, to passive watching; and, finally, ignoring the child. The type of participation variables were developed to serve as a general summary of the more specific mothering techniques which are coded by Watts' system. Thus, for example, the general type of participation titled Negative Control includes the more specific techniques such as physical restriction, punishment, threatening, warning, and refusing permission. Obviously, a fair amount of information is sacrificed by the more general category. Although several of the variable names in the participation category correspond to the variable names in the functional use of language category, the participation types are coded independently of whether language is present in that unit or not. Obviously, however, some of the participation

categories can only be coded if the mother uses language (for example - general conversation).

(1) Active Participation. A mother that is actively participating with her child is physically involved in whatever game, activity or task the child is involved in. This kind of level of participation presupposes active attempts to teach by demonstration or modeling and has, theoretically, a very potent effect on cognitive development.

Hypothesis: The Center program stresses the importance of mothers actively participating with their children; consequently, it was predicted that Center mothers would show a higher percentage of this type of behavior in the observations than Serial Control mothers as time in the program increases.

(2) General Conversation. The mother's behavior was coded as general conversation when the mother interacted with the child in a verbal manner only. However, if the function of the language was an attempt at positive or negative control of the child's behavior, general conversation was not coded. As a rule, this code was applied namely to general information, giving, comments about on-going events, and social conversations.

Hypothesis: No differences between the Center and Control groups was predicted, although it was considered possible for the program to effect the amount of general conversation due to the stress placed on "talking to your child" in the curriculum.

(3) Positive Control. A mother's behavior or type of participation with their child was coded as Positive Control when the mother attempted to direct the child to perform a particular behavior, suggested alternative ways of behaving, or attempted to shape or train a desired behavior by praise or positive reinforcement.

Hypothesis: A large amount of effort is expanded in teaching Center mothers more positive means of behavior control and behavior shaping. Consequently it was predicted that Center mothers should show more positive control attempts than the Control mothers. The difference should increase with the combined effort of time in the program, and the increasing need to shape and control behavior of toddlers.

(4) Negative Control. Behaviors coded as negative control include restrictions, prohibition, threats, expressions of hostility, and physical punishment.

Hypothesis: Even though one of the curriculum goals is to teach mothers to use less punishment and restrictions with their children, and to allow them more freedom to explore and learn, no predictions were made regarding differences between the groups in the percentage of negative control behaviors. Watts (1973) found that "A" mothers of toddlers used as much negative control as "C" mothers. Toddlers are as a rule extremely active and require a considerable amount of negative control.

(5) Monitoring or Watching Child. A mother's behavior was coded as monitoring if she watched the child without interferring physically or verbally. Depending on the situation context, this type of participation can be considered on the positive side of neutral or a relatively passive approach. When the mother and child are in the waiting room situation setting and watching only, is an indication of passive mother who doesn't seem inclined to get involved with actively teaching her child.

(6) Occasional Monitoring. This variable and the following one only make sense in the home observation where a mother can "keep an eye" on the child even from another location by looking in now and then.

Hypothesis: No differential predictions regarding program effect were made.

(7) Occupied with a Legitimate Household Task. In the home observations, a neutral category was needed for those times that a mother is doing work in the house such as cooking, cleaning, sewing, etc. In a sense, the effect in terms of active interaction with the child is the same as the last category of ignoring; however, it should not carry a negative connotation.

Hypothesis: No differences between the amount of household duties and chores were predicted between Center and Control groups.

(8) Ignoring. Mother's behavior was coded as ignoring if she was involved in an activity that satisfied her own needs or wishes. Examples of this include: watching the "stories" on T.V., gossiping with neighbors, reading a book and ignoring the child, etc.

Hypothesis: It was predicted that Center mother's would ignore their children less than Control mothers.

III. Amount of Language Mother Produces During the Observation

Although the sheer amount of verbalization is not considered as important as the functional meaning of the language, a tally of the number of interaction units in which the mother used language may well be of interest as a predictor of changes in children's language behavior.

Hypothesis: No differential predictions were made.

IV. General Style of Mother's Langua[illegible]

In keeping with Bernstein's notions of the relationships between elaborated and restricted speech and the child's cognitive competence, units in which language was present were generally classified as either elaborated or restricted. Elaborated speech is more specific to the child's task, includes more description, justification or rationale, whereas mother's speech was coded as restricted if no reasons or specific details were evident.

Hypothesis: The Center Curriculum stresses the use of explanation and increasing specificity in communications between mother and child. It was predicted that Center mothers would show more elaborated language than Control mothers.

V. Functional Use of Mother's Language

Mother's language has long been discussed as a critical variable in the development of child verbal and conceptual competence. The Parent Child Development Center Model places particular emphasis on the mother's "functional" use of language. Our model is not concerned with sheer amount of grammatical structure of mother's language, but with the functional language serves in the interaction between mother and child. Language should be used by the mother as a tool for ordering stimuli in the child's environment, providing opportunities for labelling, identifying objects and concepts, and describing feelings. Mother's language must also be used as an appropriate part of the larger interaction sequence between mother and child. Our model pays special attention, as seen above, to the mother's active participation and positive control role in her interaction with her child. Language is an important mediating feedback variable in these contests.

(1) Elaboration or Extension. Language used by the mother to call the child's attention to the specifics of an object or task, or an elaboration of the child's verbalization, was coded as Elaboration.

Example: Child is playing with a stacking ring pyramid. Mother says, "This one is red, this one is orange, and this one is blue."

Hypothesis: Language used in this manner almost always serves a teaching function. Center mothers were predicted to use more elaboration or extension than Control mothers as time in the program and child's age increases.

(2) Praise or Positive Reinforcement. The program encourages mothers to use language to praise their child's accomplishments.

Hypothesis: Center mothers should use more language for positive reinforcement than Control mothers.

(3) General Conversation. Language which was generally not specific to any ongoing or new behavior and could not be otherwise coded was lumped into this category. Examples: include baby talk when child is very young, rhetorical comments such as "What the matter?" to an infant where no response is expected? The incidence of this type of language was expected to fall as the child got older.

Hypothesis: With increasing age, this use of language becomes more negative in the sense that it carries a little information value.. No differential predictions were made for program effects, however.

(4) Positive Control of On-Going Behavior. Mother's language used in this manner include comments, commands, demands on the child to complete a task, and attempts to focus on the task at hand. The language is generally relatively restricted or it would fall into the elaboration category. Example: "Come on, Bill, pick up all your toys."

Hypothesis: No differential predictions were made.

(5) Positive Control-Initiation of New Behavior. This category includes language with function of initiation new behavior, or structuring a situation for the child. Examples: Mother says, "Why don't you play with your new dishes?" or "Go ride the pony." The mother is more actively structuring experiences in the category.

- Hypothesis: Center mothers were predicted to use more language to structure situations and learning experiences than Control mothers.

(6) Language Used to Force the Child to Structure a Verbal Response. As the child's own language system matures, a powerful tool in helping the child learn to use language to order his environment, and to use language as a communication tool is the question or a demand for verbal reply. In order to be coded in this category, some intent on the mother's part or expectancy for a response must be evident.

Hypothesis: Center mothers were predicted to use more language to force the child to respond verbally than control mothers. The curriculum stresses the mother's increasing awareness of her child as a small person capable of communicating needs and thoughts.

(7) Correction. When the mother corrected a child's verbalization for form or grammar or corrected a label or concept inappropriately applied, this category was coded. Language used for a corrective function was not expected to be noteworthy for the ages included in this study.

Hypothesis: No differential predictions were made regarding program effects for the ages analyzed.

(8) Negative Control. Language which has a function of negative control of the child's behavior includes restrictions, such as no, don't, stop it, etc.

Hypothesis: It was not predicted that Center mothers would use less language for negative control than Control mothers, however, it was predicted that Center mothers would use more justification or elaborated reasons along with such control attempts. The data are presently being analyzed to support this prediction..

(9) Criticism. One negative function of language is the use of derogatory comments about the child's behavior or person. For example, such comments as "You're bad," or "You're no good," or "You are going to fail" fall in this category.

Hypothesis: The negative effects such language has on the child was heavily stressed in the curriculum; consequently, it was predicted that Center mothers

would use less language for criticism than the Control group.

Coding Technique

Following Jean Watts' technique, each interaction observation, as it is taped, is divided into 15 seconds units. (This is done automatically in the center observations by means of a mechanical beeper, and by the observer in the home observation). A typist then prepares a protocol of the observation. Each protocol is then scored by one of two developmental psychologists. For the current analysis, each 15 second unit was scored individually for the 6 variables. Each variable is then summed over all the 15 second units in the interaction, and percent frequency scores based on the total number of units computed.

In addition to these variables which are scored unit-by-unit, 3 "summary scores" are used to globally describe each interaction as a whole. These are the 3 Ainsworth dimensions, described above:

(1) Sensitivity/Insensititivy

(2) Acceptance/Rejection

(3) Interference/Cooperation

The mean percentage scores for each variable and some summary categories were then analyzed in two ways. One-way between-groups analyses of variance were performed on the mean percentages for each category of each variable at each age (4,12,22 months for the unstructured interaction, and 24-28 months for the home observation interactions) between Center and Serial Control groups (pilot wave) and between Center II and Serial Control II groups. (Wave 3).

Secondly, a repeated measures analysis was performed on the same measures for the unstructured interactions. In the tables to follow, this will be denoted as CxT (group by time) interaction effect.*

*In the tables to follow, a high score is "good" (in keeping with programmatic expectations) except where otherwise indicated. The reliability of these data is currently being investigated. Unfortunately, lack of time to score the necessary protocols prevented inclusion of this analysis in this report.

Results of Analysis of Mother-Child Interaction-Observations: An Overview

Predictions were made for twenty-four mother-child interaction variables (not including the summary variable categories). Of the 24 hypotheses, 12 were predictions that the Center group mothers (for both Waves I and III) would score significantly higher than the Control group mothers. Almost all of these hypotheses predicted the differences between groups to materialize by 22 months of age or after at least 2 years of program intervention. Any differences favoring the Center-II group over the Serial Control-II at 12 months might well be "lagniappe,"* except for the fact that we do expect our replication wave to benefit from a better program. 11 hypotheses "predicted" no differences between groups. For each hypothesis there are three relevant F-tests, the comparison between the Center and Serial Control Wave I at 22 months in the Unstructured interaction, the comparison between the Center and Serial Control at 24-28 months of age in the Home interactions and the comparison between the Center-II and Serial Control-II Wave III groups at 12 months of age. The above data were also subjected to a repeated measures analysis; however, the group x time interaction was seldom significant due probably to the fact that the group differences were just beginning to emerge at 22 months and the groups were very equivalent at 4 months and usually still equivalent at 12 months of age.

All of the hypotheses were at least partially confirmed except for one: The Serial Control Group did not use more language for criticism than the Center group. Table I-1 provides a summary of some of the findings. This table includes

*A New Orleans French word meaning "a little something extra".

the three global ratings of "good mothering," four of the language variable considered to be of major importance, and a summary variable regarding the mother's mean level of participation with her child. Tables I-2 to I-25 contain the statistical and graphic findings for the specific variables. The important point to keep in mind as one wades through this mass of data is that, for the vast majority of the interaction variables for Wave I and III, all findings are in the predicted direction. These findingss range from highly significant differences, to trends, to very small differences. The results are highly consistent and strongly indicate that the Center program has affected the mothers' style and techniques of interaction with their children in ways which we hope favor the child's long range development of competence.

Variable 1. Sensitivity-Insensitivity

As predicted in Wave I, the Center group is significantly more sensitive than the serial control group in both the 22 month center (0.5)*, and the 24 month home observation. (.09). In Wave 3, the Center group is significantly more sensitive than the serial control group at 12 months (.06).

Variable 2. Acceptance-Rejection

As predicted, for Wave I, the center group is significantly more accepting than the serial control group in both the 22 month center (.01) and the 24 month home (.005) observations. In Wave 3, the Center group is more accepting than the serial control group at 12 months (.08).

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*Numbers in parenthesis are the probabilities that the obtained results could have occurred by chance.

Variable 3. Cooperation-Interference

Wave I does not show significant differences on this measure, although there are positive trends in the center observations. However, Wave III does show the Center mothers to be significantly more cooperative than the Serial Controls at 12 months (.002). In many of the analyses, we note that Wave III shows significant Center vs Serial Control effects as early as 12 months, in comparison to Wave I, where these effects usually don't show up until the infants are 22 months of age. It is felt that this is, in part, due to the more highly experienced educational staff.

Variable 4. Amount of Mothers' Language

As expected there are no significant differences on this variable. Although it is part of our model that it is not the sheer amount of mother language, but its quality and function, which has an effect on the child, we might expect that our stress on language would tend to influence the sheer amount of language used by program mothers.

Variable 5. Mother's Language Style-Restricted vs Elaborated

For Wave I, in the 22 months Center observation, the Center group of mothers use significantly more elaborated speech than the Serial Control group (.06). This appears true for the 24 month home observations (.08). There are no differences as yet for Wave 3 at 12 months. (If the analysis of mean length utterance currently in progress reveals (as expected) that mothers use smaller units of speech for younger children, then one might well expect not

to observe the use of elaborated language at earlier ages.)

Variables 6-14. Functional Use of Mother's Language

The categories of the functional use of language can be divided into "good" uses of language and "bad" uses of language. Theoretically, good uses should encourage the cognitive development of the child. These variables, including two summary variables, are shown in Tables I-7 to I-15. As with most findings previously reported, most of the ratings favored the center group in direction, whether they were significant or not. The positive or "good" language uses include: Use of language for elaboration or extension, language for positive control of ongoing behavior, language for positive control of new behavior and use of language to structure a verbal response from the child.

The results from the unstructured interactions are consistent with our hypotheses in that the Pilot Center group showed an increase in the use of language to initiate new behavior (Table I-10) which was significantly different from the Serial Control as age 22 months (.05).

There was an increase in the use of language to structure verbal responses from the child which while not significant at age 22 months in-center observations were in the right direction. In support of this trend, the Home Observation data on this variable from 24-28 months was significant (.06). The Wave III group also demonstrated an increase over the Serial Control-II in the use of language requiring a verbal response from the child from 4 to 12 months (.08).

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A summary variable (Table I-12) combining the three possible positive control uses of language into a single variable indicated a significant difference between the pilot wave, Center and the Serial Control groups at 22 months (.01) ... the Center mothers using more language f... all types of positive control ... control mothers.

There are no significant differences between Wave I group in the amount of language used for negative control (Table I-13, 14, 15) except at 24-28 months in the home where the Center mothers use somewhat more language for negative control than the Control mothers (.09). These findings are not inconsistent with those of Jean Watts. Watts found that mothers of competent children did not use less negative control language than other mothers but they did use more language for positive control than C mothers did.

Variable 15-24. Level or Type of Participation

A mean taken over all units of each interaction of the mother's level of participation yield a measure of the average psychological distance from mother to child (See Table I-16). The smaller the score the greater the degree of active participation. Although this variable did not yield significant differences between the Center and Control group of Wave I in the Unstructured observations, Center mothers were significantly closer or more active than Control mothers in the home observations (p= .09). Wave III did show a predicted significant increase in closeness in the waiting room observations from 4 to 12 months, (.006).

There were significant differences between the Center and the Serial Control groups in directions favoring the Center for several general categories of participation. Wave III Center mothers showed more active participation than the Serial Control mothers (.001).

At 24 months Center mothers used more positive control techniques (Table I-18) than Control mothers (.005).

Mothers in both groups and both waves did not differ in amount of monitoring of child's activity or in legitimate housework as predicted; however, Pilot Wave Control, compared to Center mothers, ignored their children significantly more when measured at home. (.02).

Summary and Discussion of Mother-Child Interaction Variables

There are many findings to the effect that mothers in the pilot wave are showing a wide variety of behavior promoted by our curricula by 22 months (or 24-28 months). Interestingly, the Wave 3 data show some significant findings by the time the infant is 12 months of age - in a direction to be expected. Reference might again be made to Table I-1 for some of the Global variables and summary variables. In summary, Center mothers show the following "good" behaviors in reference to the Serial Control mothers:

(1) Are more sensitive to childrens' needs.

(2) Have a greater tendency to accept their child's on-going behavior.

(3) (May) have a greater tendency to cooperate rather than interfere.

(4) Use more elaborated language and larger chunks of language.

(5) Use more language as a means of positive control of children's behavior and less language for negative control.

(6) Participate more actively in their children's activity.

(7) Ignore their children less.

We emphasize that our theory, and our intervention is eclectic: A sensitive, actively participating, verbal mother would seem to be a prime requisite for cognitive development, regardless of theoretic rationale.

It is felt that our results are more meaningful than the statistics indicate for several reasons. The first of these is that several trends (taken as a whole) might well produce a statistically significant result in a multivariable analysis. Secondly, Wave III, scored completely "blind," is beginning to replicate at 12 months the findings obtained from the pilot wave at 22 months. Clearly, combining groups would produce greater statistical evidence for program effectiveness than has been demonstrated.

The fact that the Wave III Center group is evidencing a positive response at 12 months, rarely demonstrated in the Pilot Wave is, in all likelihood, due to the fact that our educators were more experienced and knowledgeable by the time Wave III was recruited. There is also a likelihood that we had learned, implicitly or explicitly, how to relate to mothers, and how to reach mothers, as a result of our pilot wave experience.

One serious criticism that might be raised regarding these interaction measures is that the scorers were not completely blind. However, two points

are relevant here. First, the Center and Serial Control protocols of Wave III were, in fact, scored blind and yet the results for Wave III are quite parallel with those of Wave I, which was not scored blind. Second, we found on first inspection of the data that the Yearly Control group started higher and remained consistently higher than the Serial Control group on most of the mother-child interaction variables. Although the Yearly Control group did not appear initially different from the other groups as regards initial demographic data, we now find that after two years the Yearly Control group seems to be of higher SES status than the Serial Control and Center groups on several critical demographic variables. (These include income (YC/C p =.09; YC/SC p = .08), education (YC/C p = .02; YC/SC p = .03).) These differences probably did not emerge from differential attrition but rather because of a more skillful interviewer and more sensitive SES scales administered recently. For whatever reason, the Yearly Control group cannot be considered an adequate comparison group without partialling out the effects of their SES variables. The point, however, is that the consistently higher interaction scores of the Yearly Control group do give some additional evidence that scoring of Wave I was objective, although not blind. At the time of scoring, it was not known that the Yearly Control group was of a higher socioeconomic status. Had scorer bias been operating, the Yearly Control groups would have been lower, not higher than the Center and Serial Control group.

Table I-1

Summary of Selected Important Variables of Mother Child Interactions*

Variable	Wave 1 Center Observation (p value at 22 mos.)	(Pilot Wave) Home Observation (p value at 24-28 mos.)	Wave 3 Center Observation (p value at 12 mos.)
1. Sensitivity to child.	.05	.09	.06
2. Acceptance of child (vs Rejection.	.01 Trend +	.005 Trend -	.08 .002
3. Cooperation-Interference.			
4. Total Amount of Language.	Trend +	Trend +	Trend +
11. Summary: Use of Language for Positive Control	.01	Trend +	Trend +
12. Summary: Use of Language for Negative control	Trend +	.09(-)	Trend +
15. Summary: Closeness of Patricipation	Trend +	.09	.006

*Actual table upon these data are prepared follow in tables I-2 to I-24

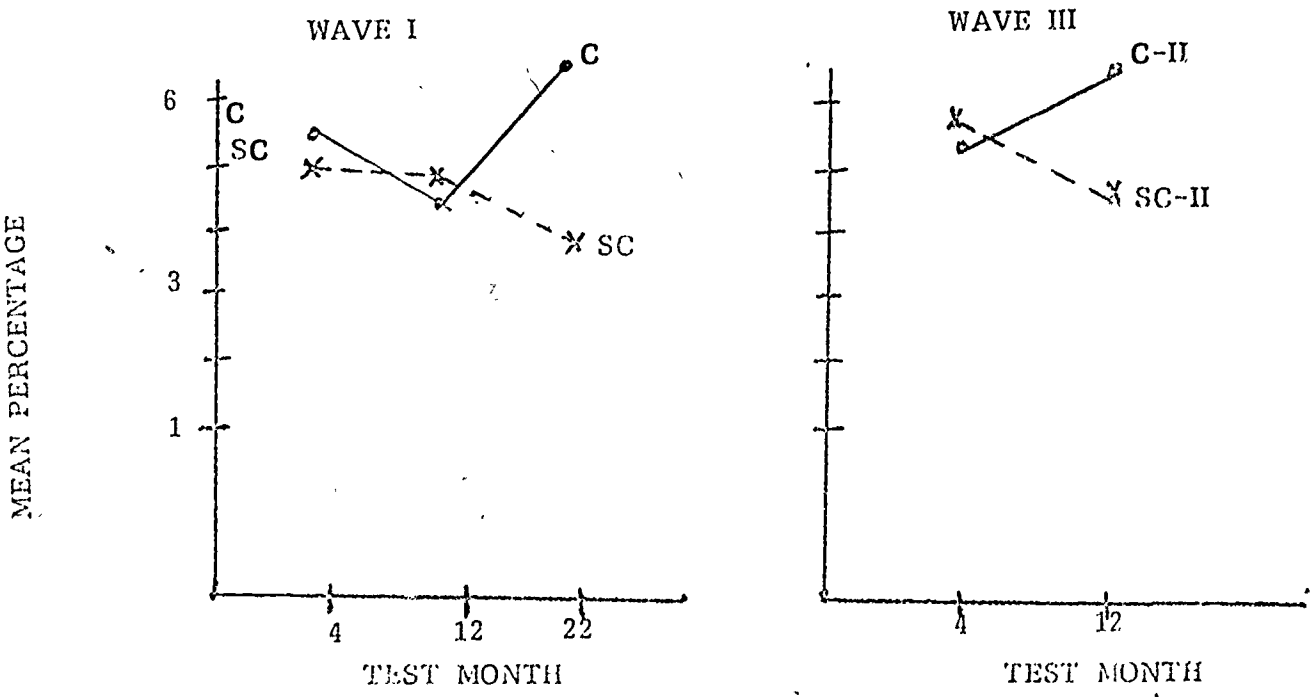
All but one of the p values is in a predicted direction. Trend + indicated the direction is as expected, but not significant. Trend-indicates a non-significant finding in an opposite direction to that predicted.

Table I-2.

Variable I. Global Rating of Mother's Sensitivity
Insensitivity to Child

Wave I (Pilot)	Unstructured Center Observations 4 mo.	12 mo.	22 mo.	Home Observations 24-28 mo.	
C (N=11)	5.20	4.60	6.20	6.66	(N=6)
SC (N=10)	5.00	4.82	3.91	4.00	(N=6)
p - values	N.S.	N.S.	F(1,19) = 4.48 p= 0.48	t = 1.49 (df=7) p= .09	

Wave III		
C-II (N=6)	5.29	6.1
SC-II (n=8)	5.6	4.6
p - values	N.S.	F(1,15) = 3.95 p= .06



Group,	F(1,19) = 1, 22, p = .28	C, F = N.S.
Time,	F(2,38) = .31, p = .74	T, F = N.S.
GXT,	F(2,38) = 3.05, p = .06	GXT, F(1, 38) = 4.36, p = .05

Table I-3.

Variable 2. Global Rating of Mother's Acceptance-Rejection of Child.

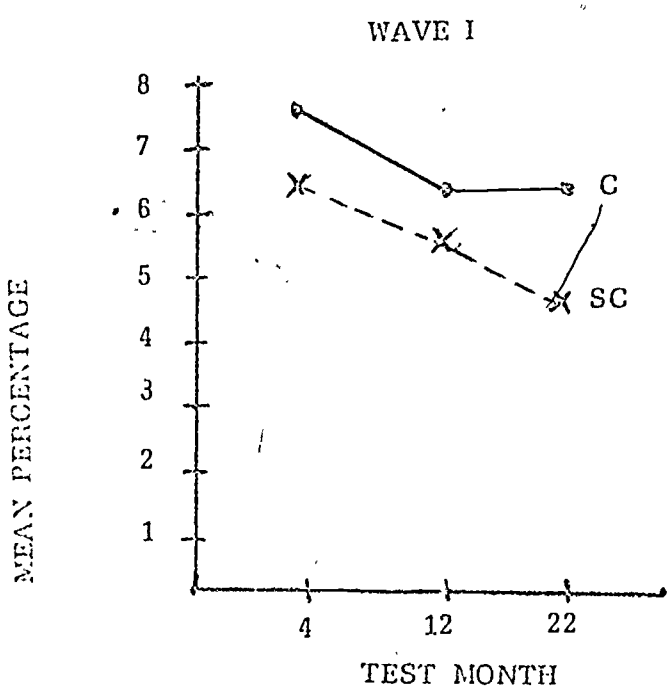
Unstructured Center Observations — Home Observations

Wave I (Pilot)

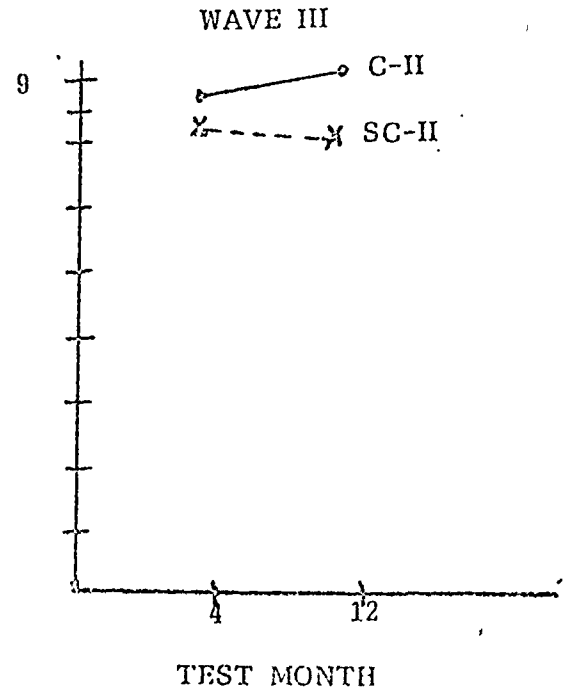
	4 mo.	12 mo.	22 mo.	24-28 mo.	
C (N=11)	7.60	6.60	6.60	8.00	(N=6)
SC (9N-10)	6.45	5.54	4.27	4.60	(N=6)
p - values	F(1,19)= 3.17 p= .09	F(1,19) =7.43 p = .29	F(1,39)=7.43 p = .013	[illegible] (df=8), p = .005	

Wave III

C-II (N=6)	8.4	8.7
SC-II (N=8)	7.8	7.0
p - values	N.S.	F(1,15) = 3.53 p = .08



Group, $F(1,19) = 7.56$, $p = .012$
Time, $F(2,38) = 4.29$, $p = .02$
GXT, $F(2,38) = .84$, $p = .56$



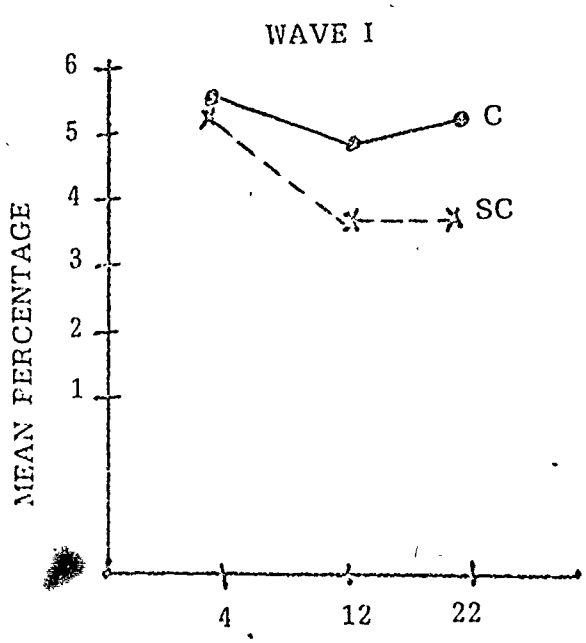
G, $F(1,15) = 2.35$, $p = .14$
T, $F(1,15) = .44$, $p = .5$
GXT, $F(1,15) = 1.97$, $p = .18$

TABLE I-4

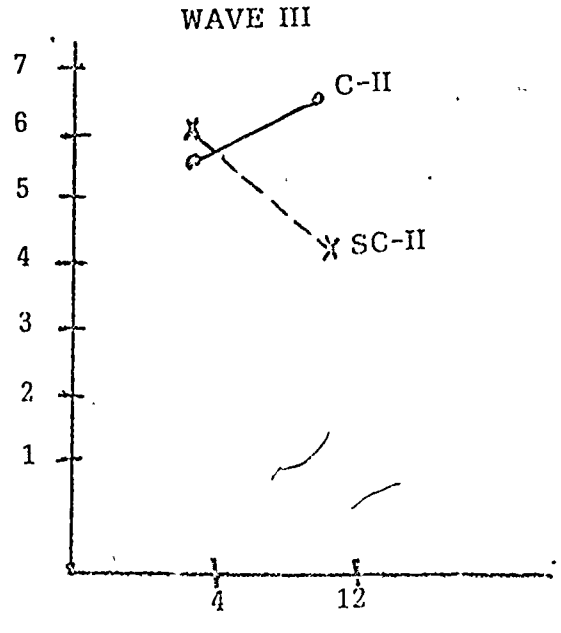
Variable 3. Global Rating of Mother's Cooperation-Interference with Child.

	Unstructured Center Observations			Home Observations
	4 mo.	12 mo.	22 mo.	24-28 mo
ave I (Pilot)				
C (N = 11)	5.40	5.00	5.20	4.70
SC (N=10)	5.36	3.73	3.73	5.80
p - values	N.S.	F(1,19)=1.79, p= .197	F(1,19)=1.72 p= .21	N.S.

AVE III		
C-II (N=6)	5.57	6.43
SC-II (N=8)	6.00	4.20
p - values	N.S.	F(1,15)=13.16, p= .002



Group, F(1,19) = 2.57, p = .12
Time, F(2,38) = 1.48, p = .24
GXT, F(2,38) = .71, p = .50



G, F(1,15) = 4.59, p = .046
T, F(1,15) = 1.59, p = .22
GXT, F(1,15) = 12.66, p = .003

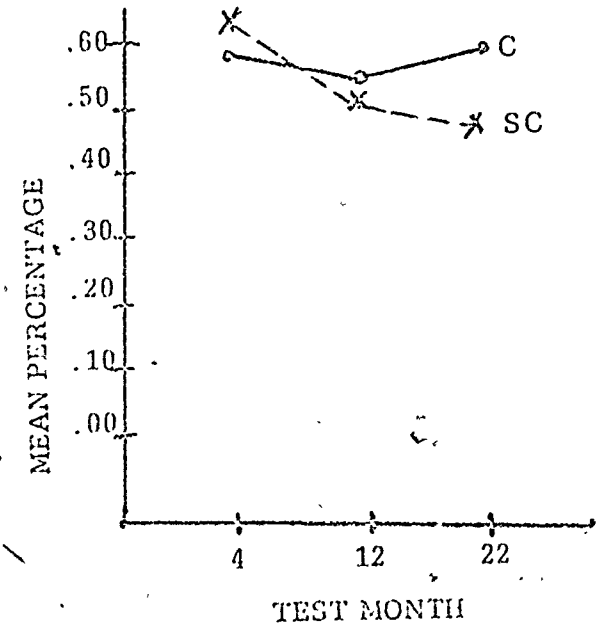
TABLE I-5

Variable 4. Total Amount (%) of Language Mother Produces during Observation.

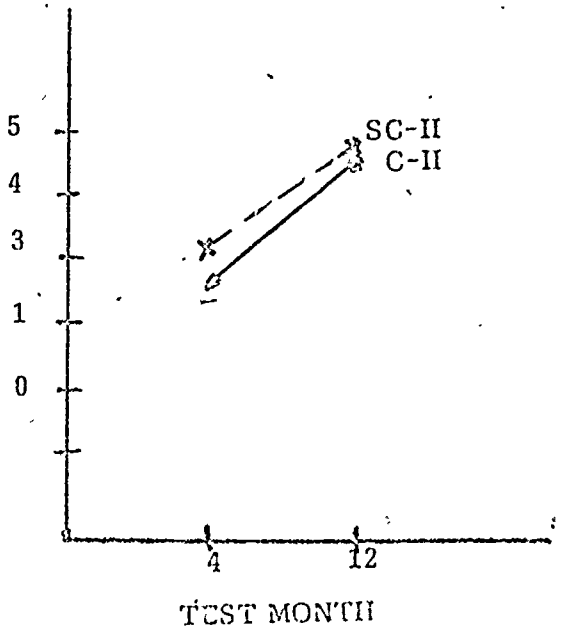
Unstructured Center Observations — Home Observations

	4 mo	12 mo.	22 mo.	24-28 mo.	
Wave II					
C-II (N=11)	.59	.55	.60	.413	(N=6)
SC-II (N=10)	.61	.53	.49	.252	(N=6)
p - values	N.S.	N.S.	F(1.19)=1.31, p= .27	N.S.	

Wave III		
C-II (N=6)	.27	.44
SC-II (N=8)	.31	.44
p - values	N.S.	N.S.



Group, F(1,19) = .37, p = .56
Time, F(2,38) = .42, p = .66
GXT, F(2,38) = .43, p = .66



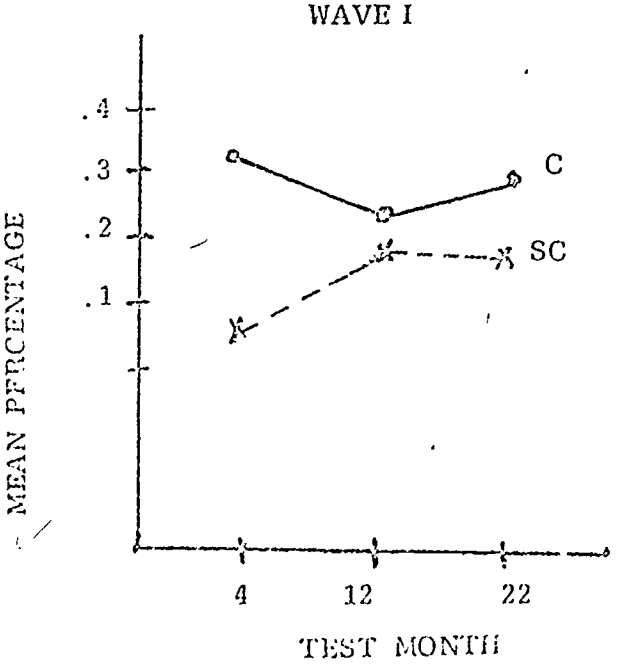
G, F(1,15) = .06, p = .82
T, F(1,15) = 5.87, p = .03
GXT, F(1,15) = .08, p = .78

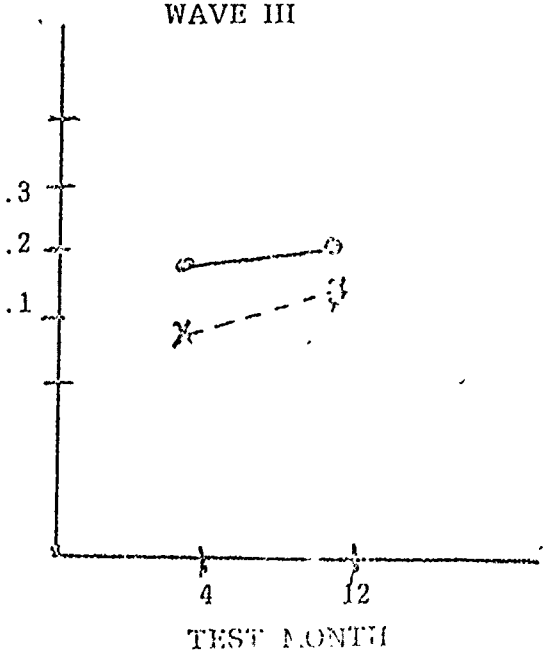
TABLE I-6

Variable F Mother's Language Style (% of Elaborated Speech)

	Unstructured Center Observations			Home Observations	
WAVE I (Pilot)	4 mo.	12 mo.	22 mo.	24-28 mo.	
C (N=11)	.32	.23	.29	.210	(N=6)
SC (n=10)	.07	.19	.18	.0720	(N=6)
p - values	F(1,19)=17.33 p= .001	N.S.	F(1,19)=3.98 p=.06	F = 1.52 (df=6) p=.03	

WAVE III		
C-II (N=6)	.19	.20
SC-II (N=8)	.09	.15
p- values	N.S.	N.S.





Group, F(1.19) = 13.11, p = .002
Time, F = N.S.
GXT, F(2,38) = 3.30, p = .05

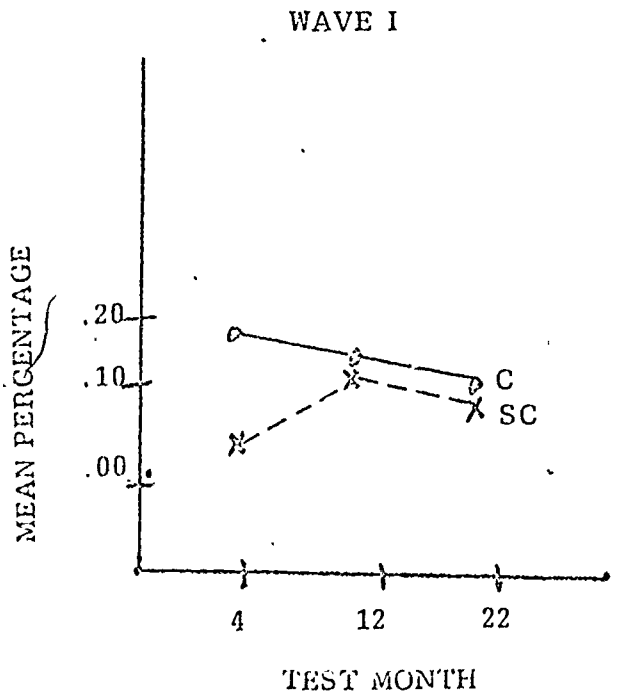
G, F = N.S.
T, F = N.S.
GXT, F = N.S.

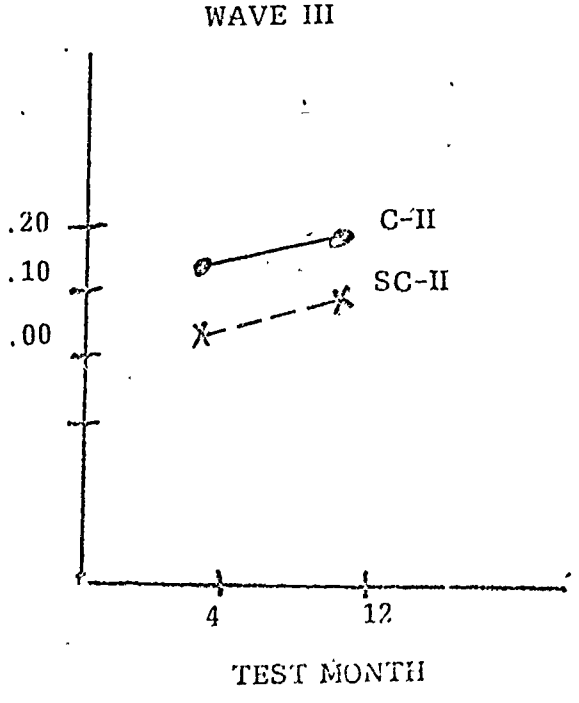
TABLE I-7

Variable 6. Percentage Mother's Use of Language for Elaboration and Extension.

	Unstructured Center Observations			Home Observations
	4 mo.	12 mo.	22 mo.	24-28 mo.
Wave I (Wks.)				
C (N=11)	.18	.14	.13	.110
SC (n=10)	.04	.11	.08	.040
p - values	F(1,19)=5.22 p = .034	N.S.	N.S.	= 1.82 (df=8) p = .05

Wave III		
C-II (N=6)	.13	.15
SC-II (N=8)	.05	.09
p - values	N.S.	N.S.





Group, F,(1,19) = 3.40
Time, F,(2,38) = .27, p = .76
GXT, F,(2,38) = 1.66, p = .21

G, F(1,15) = 4.57, p = .05
T, F(1,15) = .63, p = .55
GXT, F(1,15) = .24, p = .64

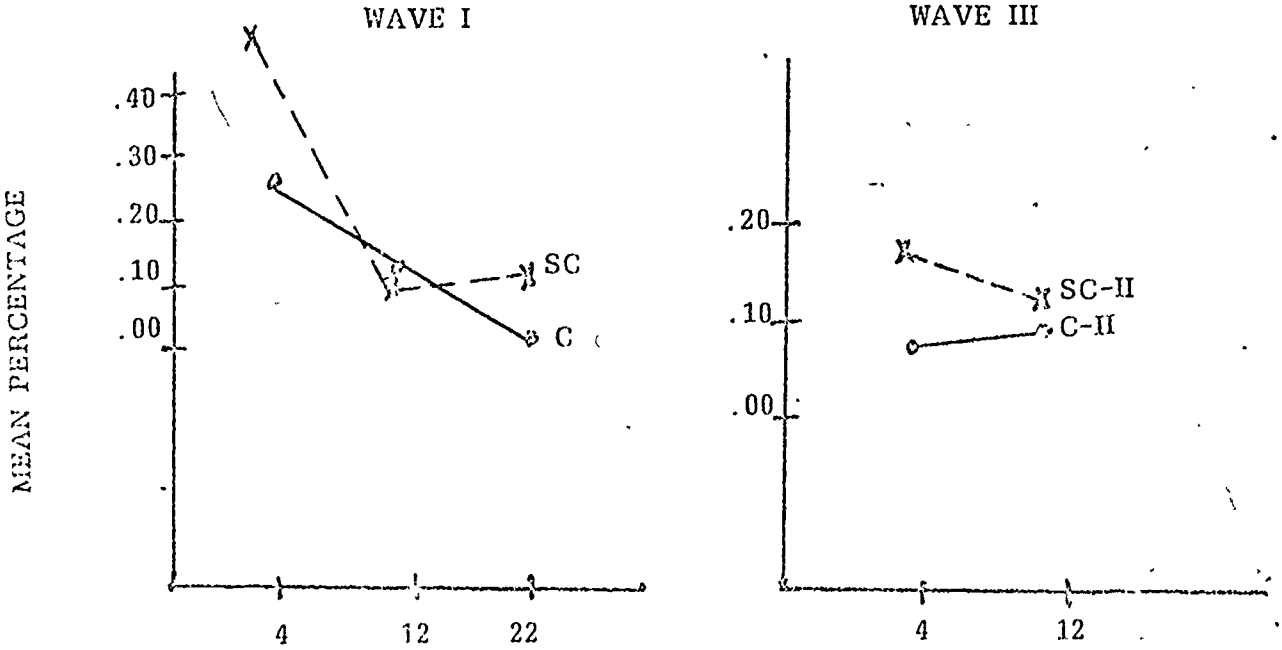
TABLE I-8

Variable 7. Percentage of Mother's Use of Language for General Conversation. (SFD 3, 3+10).

Unstructured Center Observations | Home Observations

	4 mo.	12 mo.	22 mo.	24-28 mo.
Wave I (Pilot) C (N=11)	.27	.14	.05	.085
SC (N=10)	.46	.11	.11	.072
p - values	F(1,19)=2.24 p = .15	N.S.	N.S.	N.S.

Wave III C-II (N=6)	.08	.097
SC-II (N=8)	.17	.120
p - values	N.S.	N.S.



Group, F(2,38) = 2.53, p = .13
Time, F(2,38) = 11.46, p = .000
GXT, F(2,38) = 1.53, p = 23

G, F(1,15) = 1.54, p = .24
T, F(1,15) = .1[illegible] p = .69
GXT, F(1,15) = .73, p = .59

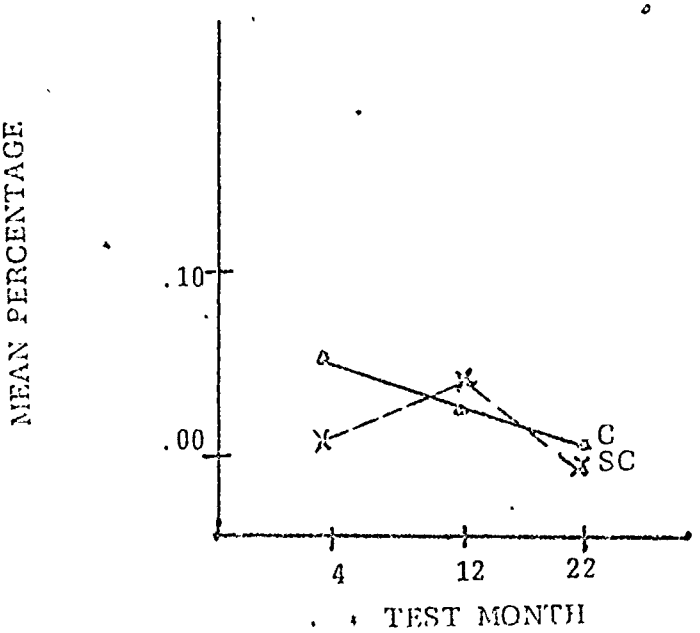
NOTE: A lower percentage of this variable is not necessarily a bad thing. Since in our closed coding system it indicates a higher incidence of more positive language uses.

Table I-9.

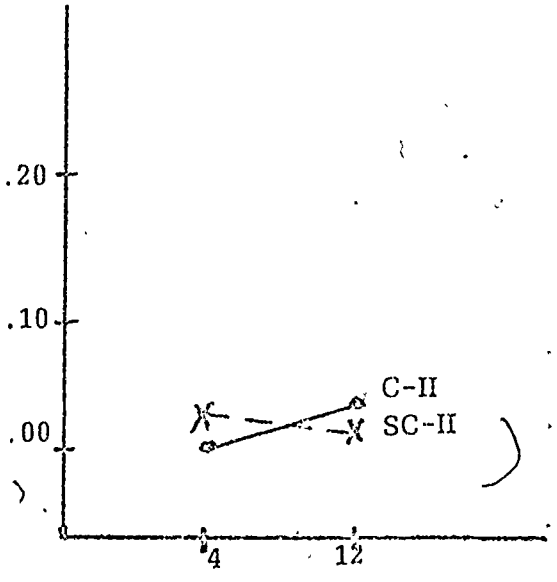
Variable 8. Percentage of Mother's Use of Language for Positive Control of On-Going Child Behavior. (FD4).

	Unstructured Center Observation			Home Observations	
Wave I (Pilot)	4 mo.	12 mo.	22 mo.	24-28 mo.	
C (N=11)	.063	.040	.023	.157	(N=6)
SC (N=10)	.018	.047	.004	.050	(N=6)
p - values	N.S	N.S	N.S.	N.S.	

Wave III		
C-II (N=6)	.000	.013
SC-II (N=8)	.018	.008
p - values	N.S.	N.S.



Group, $F(1, 19) = .78$, $p = .61$
Time, $F(2, 38) = .83$, $p = .56$
GXT, $F(2, 38) = .51$, $p = .61$



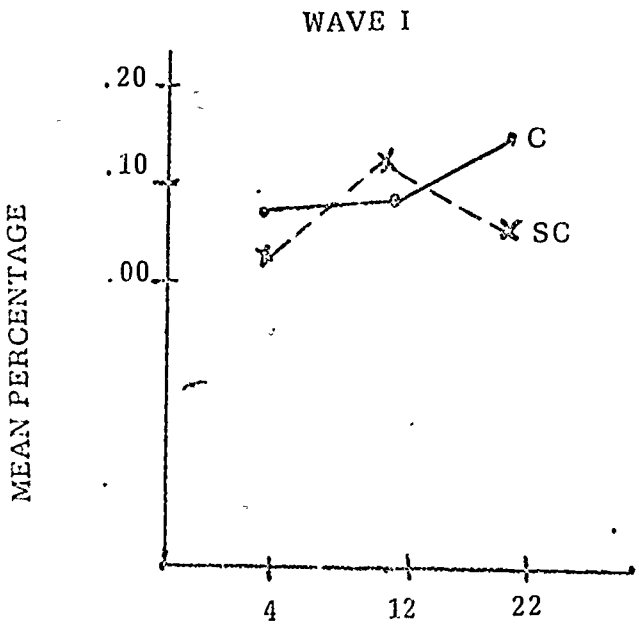
G, $F(1,15) = .22$, $p = .66$
T, $F(1.15) = .04$, $p = .83$
GXT, $F(1.15) = 2.90$, $p = .11$

TABLE I-10

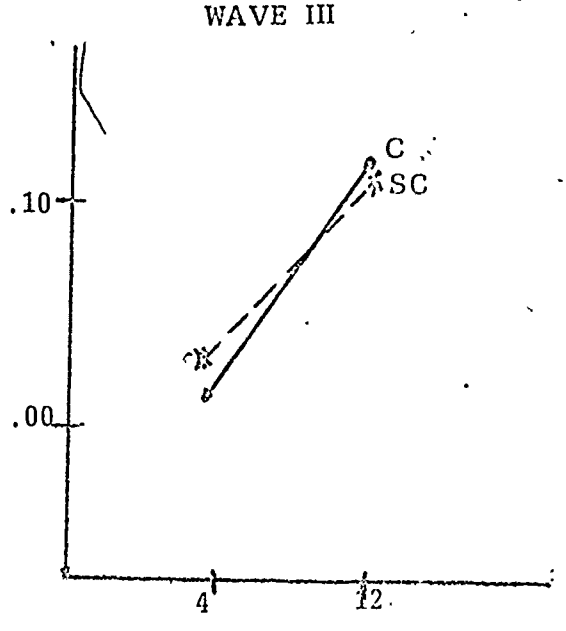
Variable 9. Percentage of Mother's Use of Language for Positive Control of New Behavior. (FD5).

	Unstructured Center Observations			Home Observations	
	4 mo.	12 mo.	22 mo.	24-28 mo.	
Wave I (Pilot)					
C (N=11)	.075	.079	.143	.053	(N=6)
SC (N=10)	.037	.11	.068	.042	(N=6)
p - values	N.S.	N.S.	F(1,19)=4.23, p= .054	N.S.	

Wave III		
C-II (N=6)	.01	.11
SC-II (N=8)	.04	.11
p - values	N.S.	N.S.



Group, F(1,19) = 1.30, p = .27
Time, F(2,38) = 1.72, p = .19
GXT, F(2,38) = 1.82, p = .17

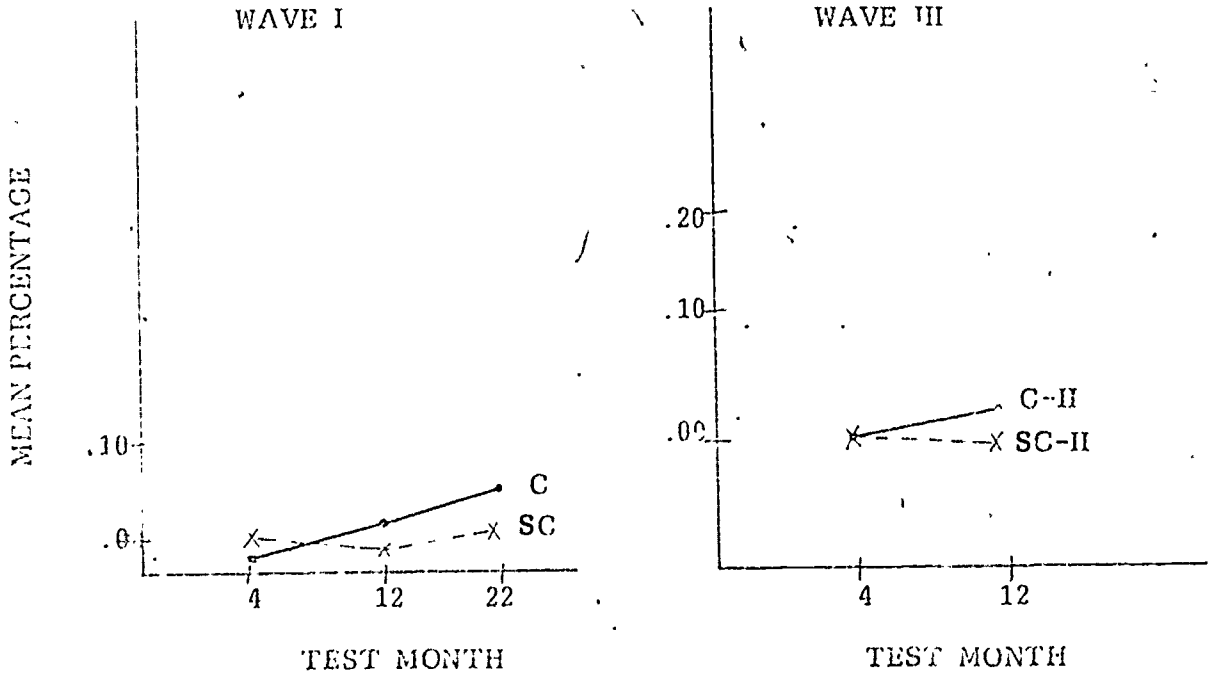


G, F(1,15) = .54, p = .52
T, F(1,15) =4.86, p = .04
GXT, F(1,15) = .08, p = .77

TABLE I-11

Variable 10. Percentage of Mother's Use of Language to Structure a Verbal Response from Child. (FP.11).

	Unstructured Center Observations			Home Observations	
	4 mo.	12 mo.	22 mo.	21-28 mo.	
Wave I (Pilot)					
C (N=11)	.000	.003	.051	.023	(N=6)
SC (N=10)	.000	.000	.020	.002	(N=6)
p - values	N.S.	N.S.	F(1,19)=1.44 p = .25	t = 1.69 (df = 8) p = .06	
Wave III					
C-II (N=6)	.000	.001			
SC-II (N=8)	.000	.000			
p - values	N.S.	Possible			



Group,	F(1,19) = 1.73, p = .20	G, F(1,15) = 3.53, p = .08
Time,	F(2,38) = 7.12, p = .003	T, F(1,15) = 3.53, p = .08
GXT,	F(2,38) = 1.29, p = .29	GTX, F(1,15) = 3.53, p = .08

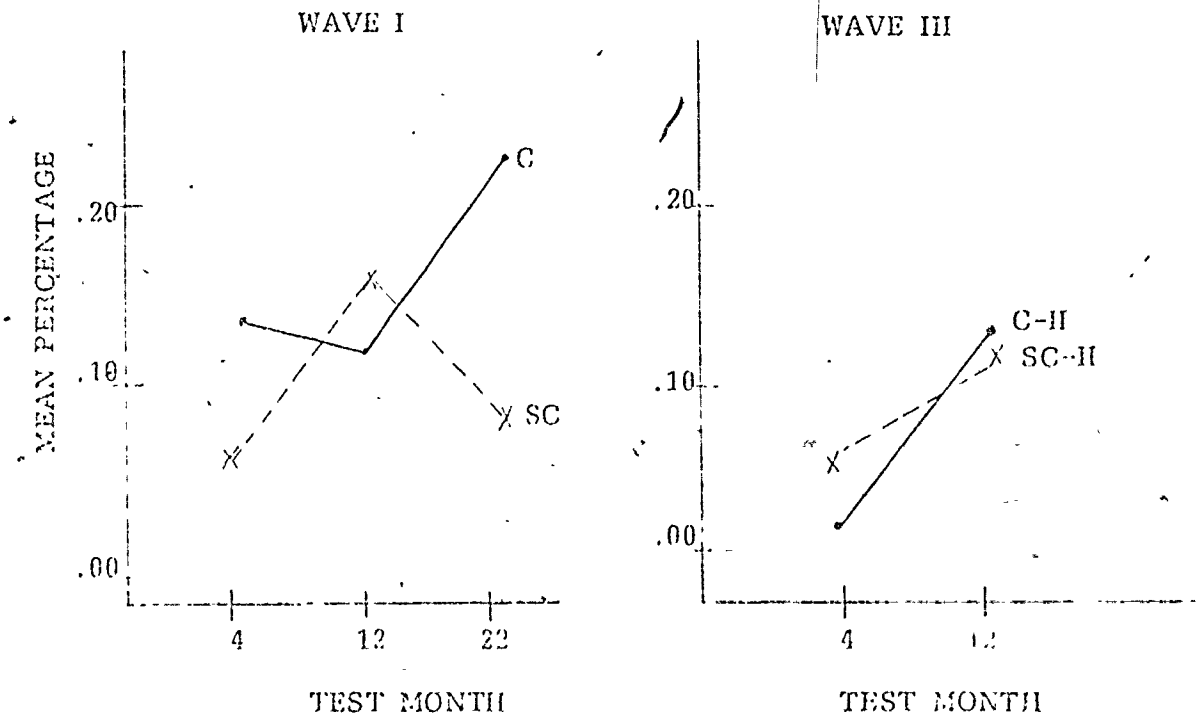
TABLE I-12

Variable 11. Summary of t Positive Control Uses of Language (SFD. 4, 4+5+11).

Unstructured Center Observations | Home Observations

	4 mo.	12 mo.	22 mo.	21-26 mo.	
Wave I (Pilot)					
C (N=11)	.14	.12	.22	.157	(N=6)
SC (N=10)	.06	.16	.09	.094	(N=6)
p values	N.S.	N.S.	F(1,19)=F.47 p = .013	N.S.	

Wave III		
C-II (N=6)	.01	.13
SC-II (N=8)	.06	.12
p - values		



Group, F(1,19) = 3.40, p = .08
Time, F(2,38) = 1.26, p = .29
GXT, F(2,38) = 2.33, p = .11

G, F(1,15) = .54, p = .52
T, F(1,15) = 5.18, p = .04
GXT, F(1,15) = .50, p = .50

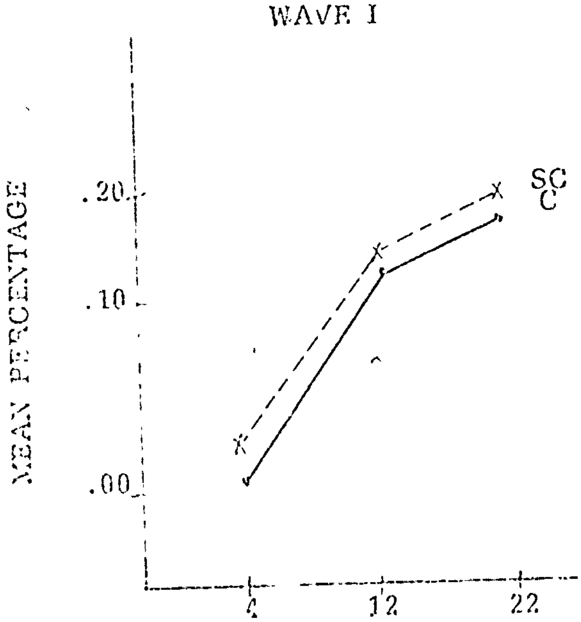
TABLE I-13

Variable 12. Percentage of Mother's Use of Language for Negative Control (Negative Reinforcement, Punishment, etc.) (FD.7).

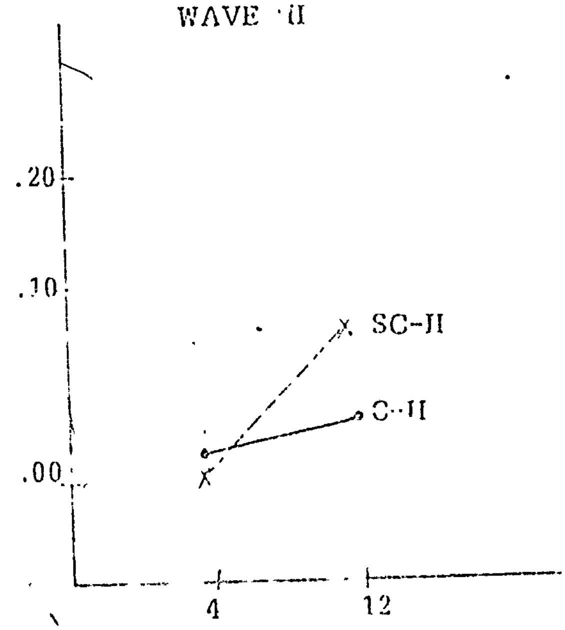
[illegible]	Unstructured Center Observations 4 mo.	12 mo.	22 mo.	Home Observations 4 23 mo.	
C (N=11)	.00(	.107	.115	.010	(N=6)
SC (N=10)	.027	.11?	.145	.004	(N=6)
p values	N.S.	N.S.	N.S.	N.S.	

[illegible]	[illegible]	[illegible]
[illegible] (N=6)	.03	.04
SC-II (N=6)	.02	.08
p - values	N.S.	N.S.

WAVE I



WAVE II



Group,	$F(1,19) = .40$, $p = .54$	G,	$F(1,15) = .31$, $p = .59$
Time,	$F(2,38) = 15.49$, $p < .0001$	T,	$F(1,15) = 3.61$, $p = .07$
GXT,	$F(2,38) = .18$, $p = .84$	GXT,	$F(1,15) = 1.80$, $p = .20$

NOTE: A greater percentage of language for negative control is not desirable.

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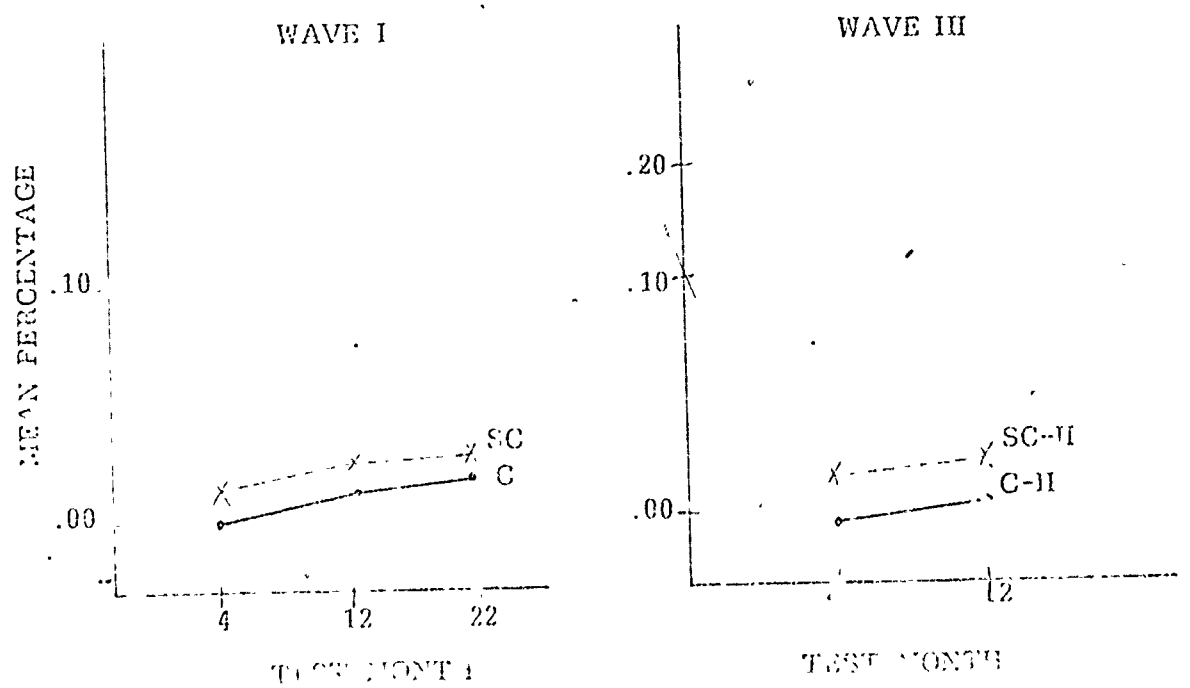
TABLE I-14

Variable 13. Percentage of Mother's Use of Language for Criticism of Child's Behavior or Personality. (FD. 8).

	Unstructured Center Observations			Home Observations	
	4 mo.	12 mo.	22 mo.	24-28 mo.	
Wave I (Mod)					
C (N=11)	.000	.022	.028	.048	(N=6)
SC (N=10)	.028	.029	.030	.030	(N=6)
p - values	N.S.	N.S.	N.S.	N.S.	

Wave III

C-II (N=6)	.00	.003
SC-II (N=8)	.01	.027
p - values	N.S.	F(1,15)=1.77 p = .203



Group, F(1,19) = .63, p = .56
Time, F(2,38) = .72, p = .50
GXT, F(2,38) = .57, p = .57

G, F(1,15) = 4.70, p = .12
T, F(1,15) = 1.85, p = .19
GXT, F(1,15) = .46, p = .52

NOTE: A greater percentage of language for criticism is not considered desirable.

Table I-15.

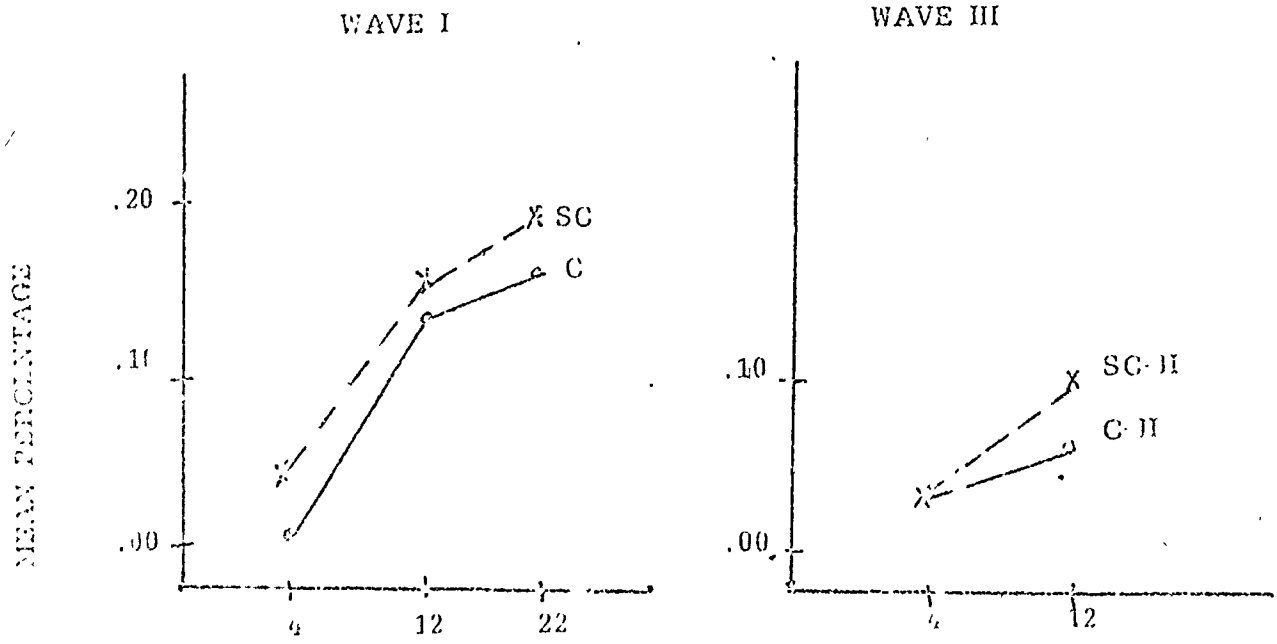
Variable 14. Summary of Negative Control Uses of Mother's Language. (SFD 6, 7+8).

	Unstructured Center Observations 4 mo.	12 mo.	22 mo.	Home Observations 24-28 mo.
C (N=11)	.006	.128	.142	.060
SC (N=10)	.056	.142	.176	.034
p - values	N.S.	N.S.	N.S.	t = 1.46 p = .09

(N=6)

(N=6)

C-II (N=6)	.03	.05
SC-II (N=8)	.03	.05
p - values	N.S.	F(1,15)=2.0 p = .177



TEST MONTH

TEST MONTH

Group,	F(1,19) = 1.07, p = .31	G, F (1,15) = 1.04, p = .33
Time,	F(2,38) = 0.82, p = .0004	T, F (1,15) = 4.89, p = .04
GXT,	F(2,38) = .18, p = .83	GXT, F (1,15) = 2.09, p = .17

NOTE A higher percentage is undesirable.

Table I-16.

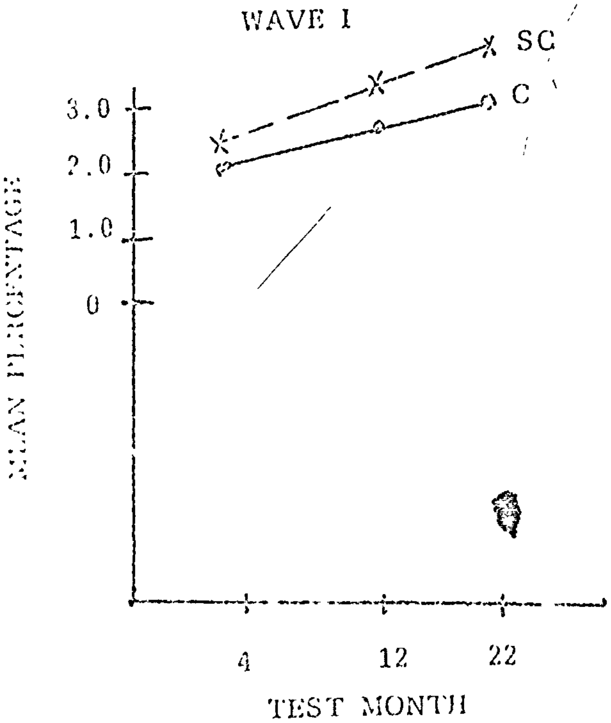
Variable 15. Mean Level of Participation.

	[illegible] Center Observation 4 mo.	12 mo.	22 mo.	Home Observations 24-28 mo.	
Wave I [illegible]	[illegible]	2.8[illegible]	2.9[illegible]	4.07	(N=6)
SC (N=6)	2.28	3.01	3.06	5.06	N (=6)
p - values	N.S.	N.S.	N.S.	t = 1.45 (df=8) p = .09	

Wave III

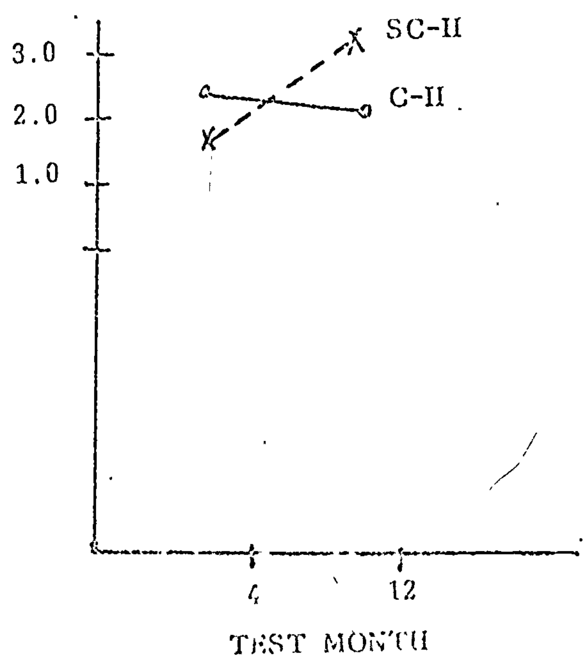
C-II (N=[illegible])	2.36	2.03
SC-II (N=8)	1.96	3.03
p - values	N.S.	F (1,15) = 9.99 p = .006

WAVE I



Group, F - N.S.
Time, F (2,28) = 4.16, p = .02
GXT, F N.S.

WAVE III



G, F N.S.
T, F = N.S.
GXT, F (1,15) = 3.67, p = .07

NOTE: A lower mean score is conceptually better than a high score.

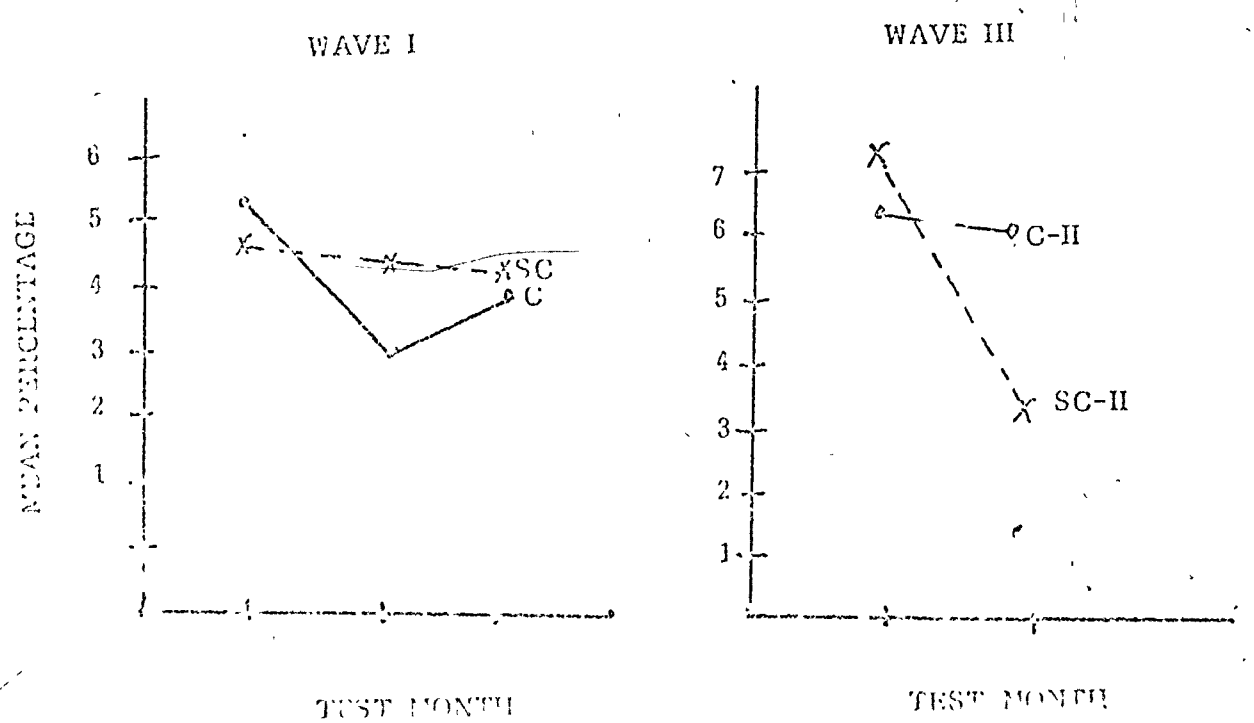
Table I 17.

Variable 16. The Amount (%) of the Mother's Active Participation with the Child. (PART 1.)

	Unstructured Center Observations 4 mo.	12 mo.	22 mo.	Home Observations 24-28 mo.	
C(N=11)	.535	.305	.393	.178	
SC(N=10)	.491	.414	.413	[illegible]	(N=6)
p - values	N.S.	N.S.	N.S.	[illegible]	(N=6)

Wave II

C (N=6)		.610
SC (N=6)	.708	.338
p - values	N.S.	F(1,15)=16.01 p = .001



Group, F N.S.
Time, F = N.S.
GXT, F - N.S.

G, F(1,15) = 1.96, p = .18
T, F(1,15) = 5.62, p - .03
GXT, F(1,15) = 4.27, p = .05

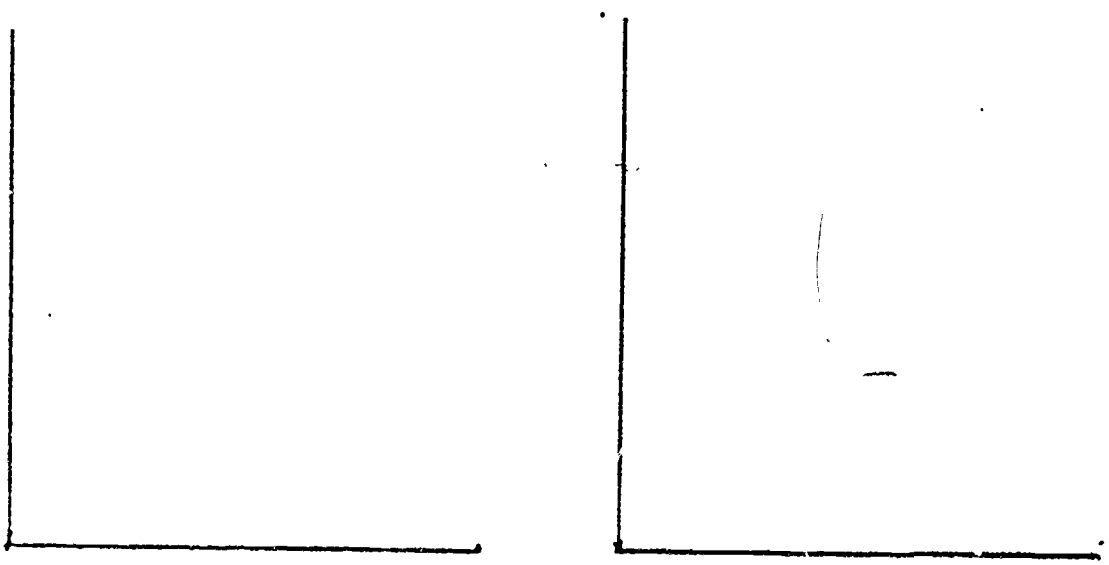
Table I-18.

Variable 17. The Amount (%) of General Conversation Direct to the Child. (PART. 2.)

	Unstructured Center Observations			Home Observations
	4 mo.	12 mo.	22 mo.	24-28 mo.
Wave I (pilot)				
C (N=11)	.154	.058	.016	.186
SC (N=10)	.193	.014	.056	.088
p - values	N.S.	F(1,19) =4.28 p = .05	N.S.	t = 2.94 p = .005
Wave III				
C-II (N=6)	.007	.029		
SC-II (N=8)	.058	.038		
p - values	N.S.	N.S.		

(N=6

(N=8



Group, F = N.S.
Time, F(2,38) = 5.64, p = .007
GXT, F = N.S.

G, F = N.S.
T, F = N.S.
GXT, F = N.S.

Table I-19.

Variable 18. The Amount (%) of the Mother's Use of Positive Control Techniques. (PART.3.)

Wave I (Pilot)

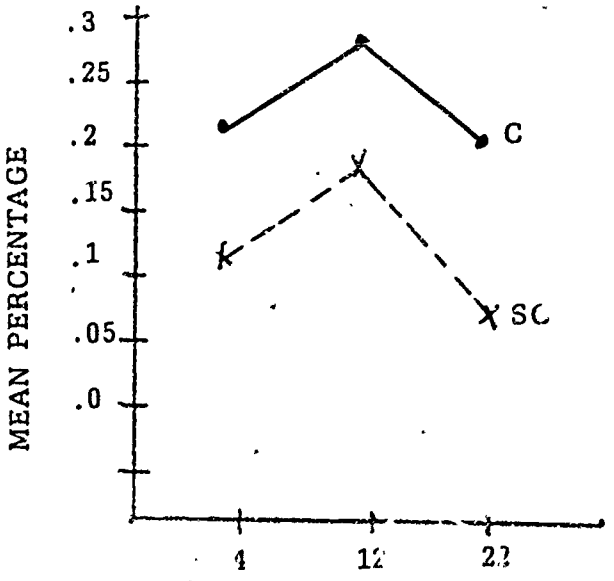
	Unstructured Center Observations 4 mo.	12 mo.	22 mo.	Home Observations 24-28 mo.
C (N=11)	.220	.275	.206	.124
SC (N =10)	.133	.184	.058	.110
p - values	N.S.	N.S.	F(1,19)=9.85 p = .005	N.S.

(N=6
(N=6

Wave III

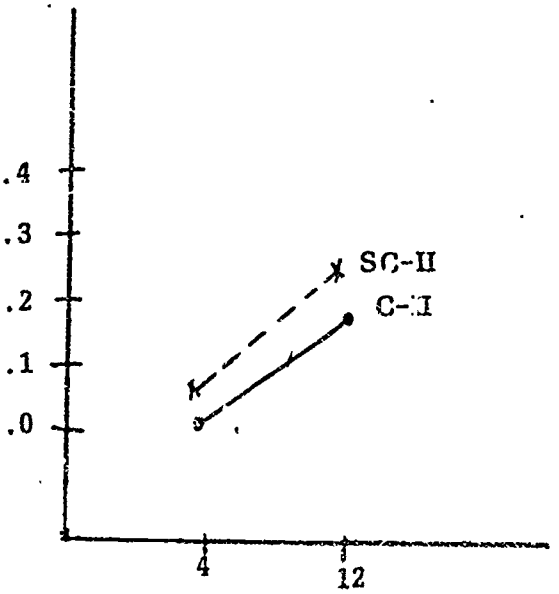
C-II (N=6)	.014	.130
SC-II (N=8)	.062	.223
p - values	N.S.	N.S.

WAVE I



Group, F(1,19) = 4.68, p = .04
Time, F = N.S.
GXT, F = N.S.

WAVE III



G, F(1,15) = 4.77, p = .04
T, F(1,15) = 6.88, p = .02
GXT, F = N.S.

Table I-20

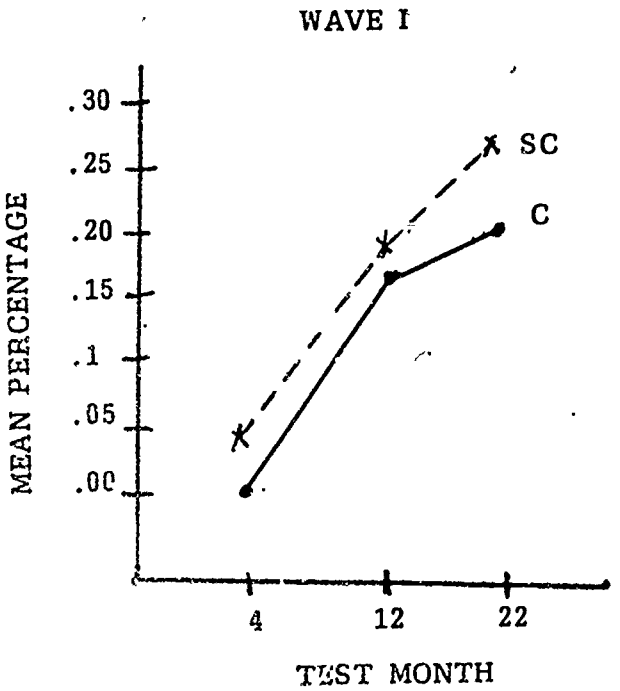
Variable 19. The Amount (%) of the Mother's Use of Negative Control Techniques. (PART. 4.)

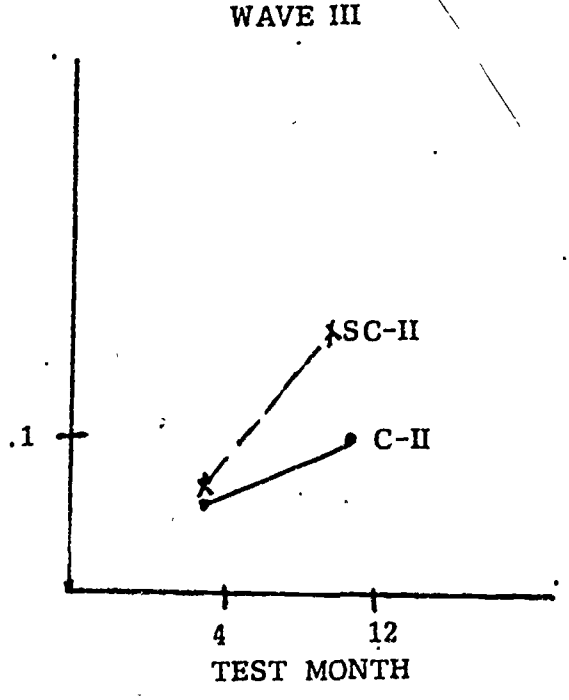
Wave I (Pilot)

	Unstructured Center Observations 4 mo.	12 mo.	22 mo.	Home Observations 24-28 mo.	
C (N=11)	.000	.157	.183	.052	
SC (N =10)	.041	.169	.254	.058	(N=6)
p - values	N.S.	N.S.	N.S.	N.S.	(N=6)

Wave III

C-II (N=6)	.049	.087
SC-II (N=8)	.052	.151
p - values	N.S.	N.S.





Group, F = N.S.
Time, F(2,38) = 15,67, p = .0001
GXT, F = N.S.

G, F = N.S.
T, F(1,15) = 5.39, p =
GXT, F = N.S.

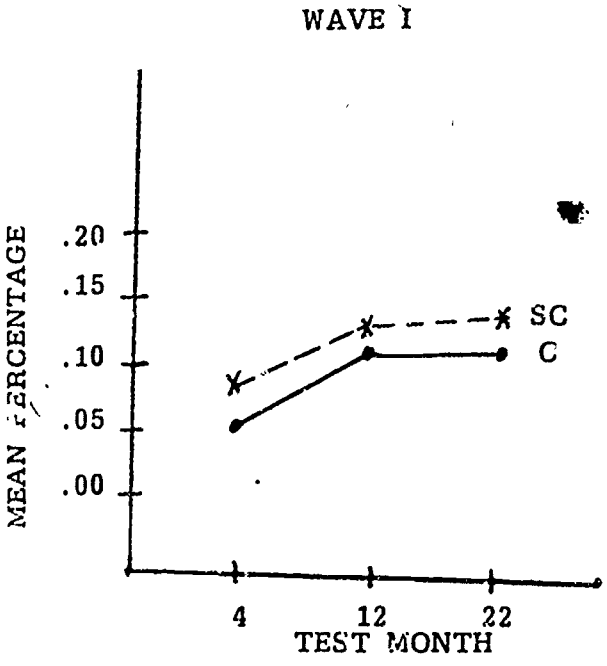
NOTE: A higher percentage of this type of interactive technique is not desirable.

Table I-21

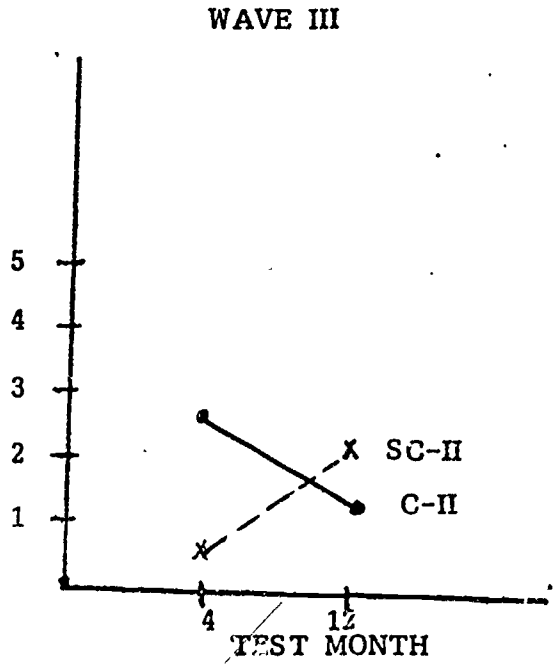
Variable 20. Amount of Time (%) Mother Spent Watching Child Only. (PART. 5.)

	Unstructured Center Observations 4 mo.	12 mo.	22 mo.	Home Observations 24-28 mo.	
Wave I (Pilot)					
C (N=11)	.054	.117	.117	.148	(N=6)
SC (N =10)	.097	.124	.127	.168	(N=6)
p - values	N.S.	N.S.	N.S.	N.S.	

Wave III		
C-II (N=6)	.287	.113
SC-II (N=8)	.063	.224
p - values	F(1,15)=3.94 p = .07	N.S.



Group, F = N.S.
Time, F = N.S.
GXT, F = N.S.



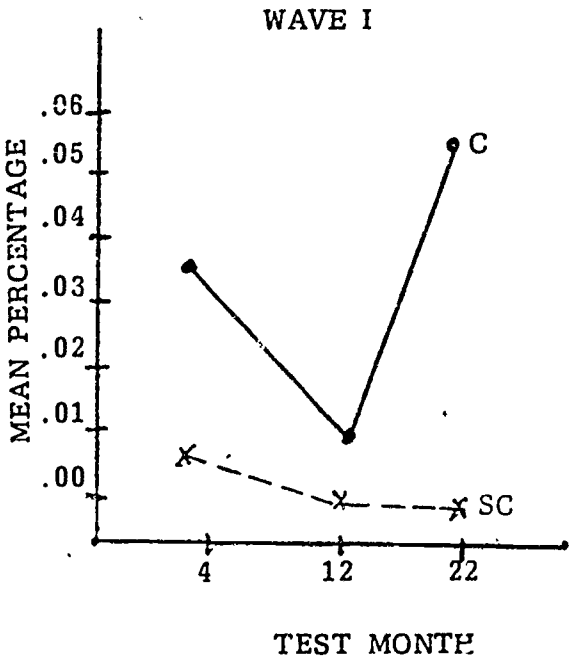
G, F = N.S.
T, F = N.S.
GXT, F9115) = 7.62, p = .01

TABLE I-22

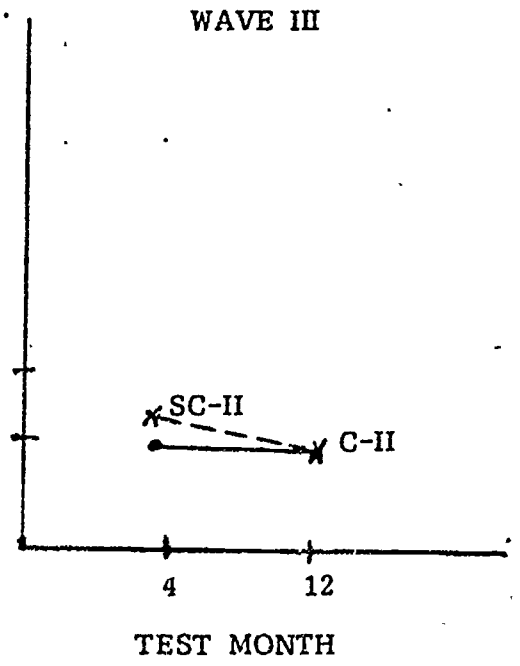
Variable 21. Amount of Time (%) Mother Spent Monitoring Child from Another Location. (PART. 6)

	Unstructured Center Observations			Home Observations	
	4 mo.	12 mo.	22 mo.	24-28 mo.	
Wave I (Pilot)					
C (N=11)	.036	.010	.056	.062	(N=6)
SC (N=10)	.008	.000	.000	.056	(N=6)
p - values	N.S.	N S.	Possible	N.S.	

Wave III		
C-II (N=6)	.000	.000
SC-II (N=8)	.004	.000
p - values	N.S.	N.S.



G, F = N.S.
T, F = N.S.
GXT, F = N.S.



G, F = N.S.
T, F = N.S.
GXT, F = N.S.

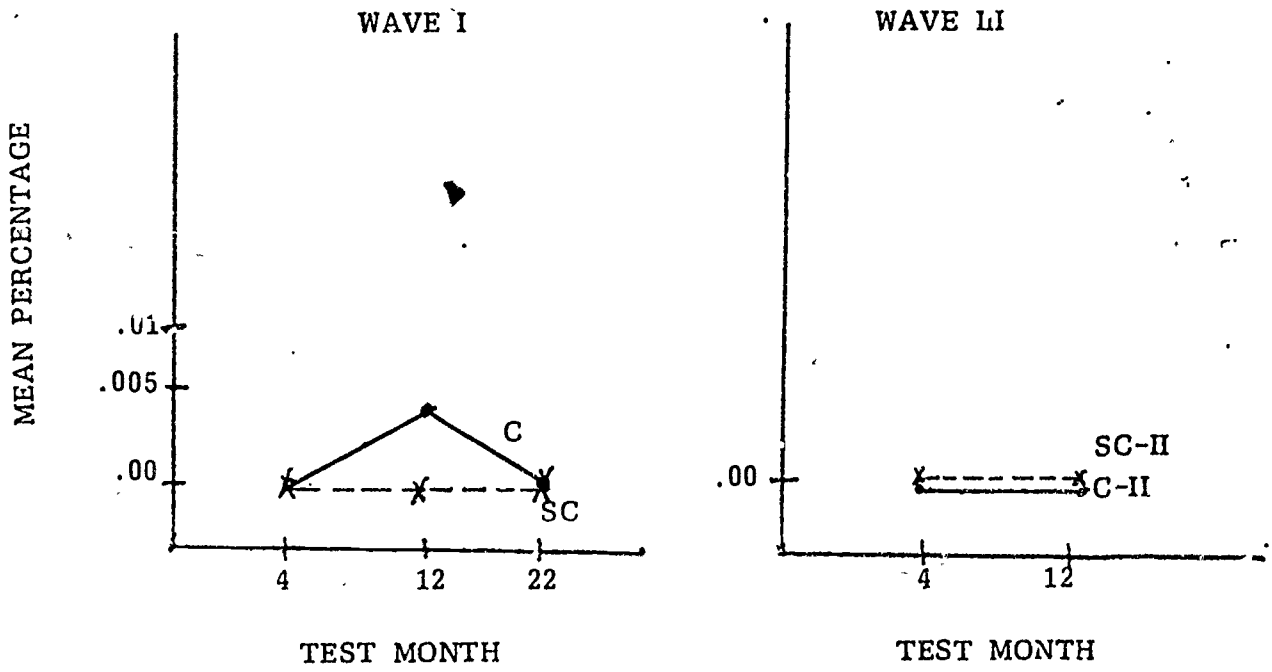
TABLE I-23

Variable 22. Amount of Time (%) Mother Spent in Legitimate Household Duties. (PART. 7)

	Unstructured Center Observations			Home Observations	
Wave I (Pilot)	4 mo.	12 mo.	22 mo..	24-28 mo.	
C (N=11)	.00	.005	.000	.222	(N=6)
SC (N=10)	.000	.000	.000	.216	(N=6)
p - values	N.S.	N.S.	N.S.	N.S.	

Wave III

C-II (N=6)	.00	.00
SC-II (N=8)	.00	.00
p - values	N.S.	N.S.



Group.	F = N.S.	G, F = N.S.
Time,	F = N.S.	T, F = N.S.
GXT,	F = N.S.	GXT, F = N.S.

TABLE I-24

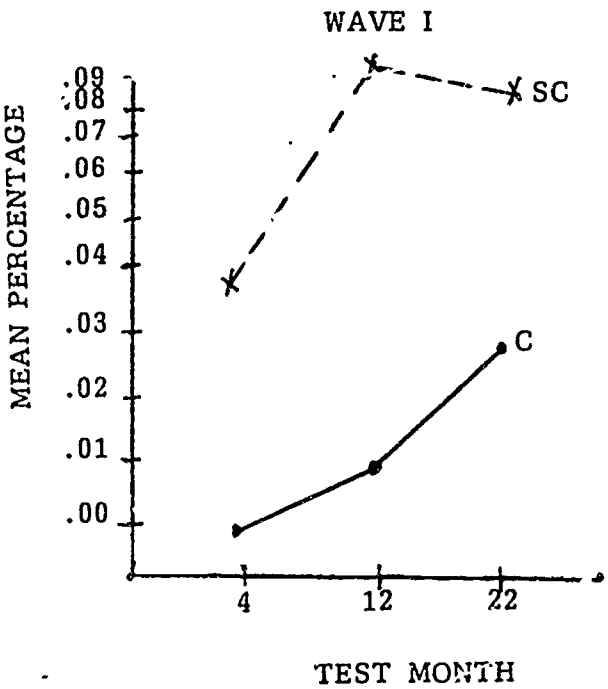
Variable 23. Amount of Time (%) Mother Spent Ignoring Child. (PART. 8)

Wave I (Pilot)

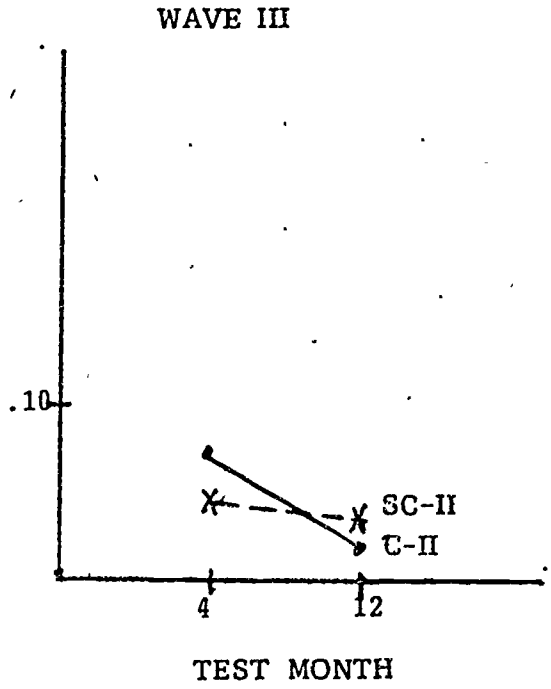
	Unstructured Center Observations 4 mo.	12 mo.	22 mo.	Home Observations 24-28 mo.	
C (N=11)	.000	.009	.028	.030	(N=6)
SC (N=10)	.037	.090	.087	.204	(N=6)
p - values	N.S.	N.S.	N.S.	t = 2.36 p = .023	

Wave III

C-II (N=6)	.007	.00
SC-II (N=8)	.047	.021
p - values	N.S.	N.S.



G, F = N.S.
T, F = N.S.
GXT, F = N.S.



G, F = N.S.
T, F = N.S.
GXT, F = N.S.

OUTCOME MEASURES: MOTHERS ATTITUDES AND CHILD DEVELOPMENT

In this section, we will consider one measure of mothers' attitudinal change, and final outcome measures as regards child development.

Educational Attitude Survey

Table 0-1 reports data on one factor (including 5 items) taken from Hess and Shipman's "Educational Attitude Survey" (Test 28). In the third year of our intervention, curriculum materials deal with "your child in school" and discussions center around problems that mothers might encounter with her child's school experiences. As a result of our direct and indirect instruction, we would predict that mothers in our program would develop a greater sense of power as regards their child's scholastic problems. The data reported in Table 0-1 are actually a pre-test measure of attitudes toward school and education. The slight trend for the Center groups (both Waves) to exhibit more desirable attitudes toward education and their role in it are no doubt due to a general program effect on feelings toward education and powerlessness during the first two years. At the end of the third year of intervention larger differences between Center and Control groups are expected.

Child Development Measures: Uzgiris-Hunt

The Uzgiris-Hunt Scales (Test 06) were administered every two months to all infants from 2 to 22 months of age. (They were given to the Yearly Controls only at 12 months of age). The Uzgiris-Hunt Scales are based on Piaget's

Sensorimotor theory, and are designed to measure several of the important trends during the sensorimotor period. The scales were chosen because much of our child development curriculum embodies Piagetian theory. In addition, we would hope that such theoretically based scales might prove more sensitive to changes in infant development than do such traditional scales as the Bayley (which we also used). The Uzgiris-Hunt Scales we used are:

1. Permanence of Objects - Example: Finding hidden objects behind one of two screens; searching systematically through a series of hidden displacements.

2. Means-Ends Relationship - Example: Child demonstrates the use of tools, such as using a stick to get a doll.

3. Schemas in Relation to Objects. - Example: As a primitive level, infants mouth all objects. Later they roll cars and make "nice" to dolls. As a more advanced level they know and label objects.

5. Construction of Objects in Space. - Example: Child understands gravity as demonstrated by dropping objects and watching; can use an inclined plane to make objects roll, comprehends equilibrium as demonstrated by building a tower.

6. Development of Verbal Imitation.

We predicted that the biggest program impact would begin to be seen after age 2 years. We expected this because most of the psychological literature has not found a great deal of environmental impact on competence of very young infants. On the other hand, we hoped that by using a more sensitive assessment of competence such as the Uzgiris-Hunt Scales, that we might find an earlier program impact, in favor of the Center group. We had no specific predictions regarding which of the Uzgiris-Hunt Scales might be most sensitive to program effect. Each scale measured a different aspect of sensorimotor competence, but there had not been very much previous research on the scales taken individually.

For the sake of brevity, we have presented data only for ages 4 months, 12 months and 20-22 months.

Results and brief summary statements for the pilot wave of infants are shown in Tables 0-2, 0-3, 0-4, and Figures 1-4. These data imply that there was a meaningful advance by the Center infants, relative to the Serial Control group, on 4 of the 5 Uzgiris-Hunt Scales. These can be seen graphically on Figures 1-4. Part of the advance implies differential catch-up: the Center group was significantly lower than both control groups at 12 months of age on 2 of the subtests: Scale 1 ($p = .06$) and Scale 2 ($p = .05$). At 22 months, the Center group had caught up on Scale 1, and was significantly ahead on Scale 2 ($p = .05$). In addition, the Center group was significantly ahead on Scale 3 at 22 months (.05), and ahead, although not significantly, on Scale 5 (.10).

There is no way of knowing the reason for the partial 12 month inferiority of Center infants. Some developmental studies relate similar phenomenon to separation anxieties in infants who show greater attachment to significant others. More than likely, the twelve month deficit, as well as the 20-22 month advantage of the Center group should be viewed with respect to the battery of demographic and social-psychological measures shown in Tables SES-3 and SES-4. To review, these tables indicate that the mothers in the groups were not different as regards "IQ" types of verbal skills, nor were they different on standard demographic data. However, Center mothers appear to have a less education and a poorer work record, and, as rated by social workers, have less achievement needs and appear more withdrawn or unemotional. Possibly the 12 month Center group inferiority reflects these mothers' characteristics. Thus, the 20-22 month Center infants' advance may be highly meaningful: mothers, despite personality trends or educational history, can be taught to interact meaningfully. Because the dice were inadvertantly loaded against the Center group, the positive results on 4 of the 5 Uzgiris-Hunt Scales are particularly noteworthy.

We conclude that the 20-22 month Uzgiris-Hunt data imply that the Center group is developing at an apparently accelerated pace despite (a) mother's inferiority on selected social-psychological measures; (b) demographic equality, and (c) equality on tests of verbal intelligence. Data presented in previous reports show that these mothers also changed with respect to highly relevant child-rearing characteristics.

Uzgiris-Hunt: Wave 3

Infants were tested every 2 months between 2 and 12 months. We prepared tables at 2, 6, and 12 months but are not including these for the sake of brevity. We predicted that there would be no group differences between Center and Serial Controls at these ages, partially because of our previous experience, but mostly because of the literature which shows little environmental impact on infant test scores below age 2.

The results may be summarized:

1. At 2 months, the Center group was superior on 4 of 5 subtests. This is not interpretable. It is not a program effect, as the mothers have just entered the program. It should be noted that at this testing occasion, testers were "blind".
2. At 6 months the Center group is superior (.05) to the Control group on 1 of 5 tests. This is not remarkable and not much can be made of this.
3. At 12 months, there are no significant differences. This is "predictable" and expected. On 4 of 5 subtests, the Center group is non-significantly advanced. On the 5th subtest, the serial control tended to be advanced (.12).

Bayley Developmental Scales

1. Pilot Wave

Data as concerns the Bayley Mental Test Scales are shown in Figures 6 and 7. They were administered to the pilot wave at

7, 13, 19, and 25 months of age. Once again, we cannot make specific predictions: infant testing traditionally becomes meaningful at about 28 months of age. We had no specific predictions for the Bayley scores, as previous literature has shown early Bayleys to be quite unresponsive to environmental differences as well as relatively nonpredictive of later intelligence test scores.

On the mental scale, all groups showed a characteristic general decline, with no significant differences between groups. (Compare with Birmingham's data!) We here hypothesize that the 25 month mental scores represent a true baseline for intelligence test type scores, and that future changes especially on the Stanford Binet, will be more meaningful. On the psychomotor scale, the Center group shows an increase in scores between 13 and 25 months, whereas both Control groups decline. These changes are surprisingly significant, at 25 months, but the interpretation is difficult.

Perhaps the advanced motor scale for the Center group reflects this group's experience with the many and varied large muscle toys available to them in the Center.* The possibility

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*It has been suggested by a paraprofessional worker that poor motor behavior reflects a prohibitive, restrictive mother - possibly the case in our Control groups. Previous data indicate this is not the case in our Center group - in that they significantly interact in a more positive fashion with their children.

that sex was a confounding variable was investigated. Chi-square and Fisher's exact probability tests of the groups-by-sex distribution of the total sample were not significant for those samples actually used in the 13-, 19-, and 25-month Bayley analysis. Hence, since the sexes were distributed in the same proportion in both the Center and Serial Control groups, the group differences reported above could not actually have been sex differences. Furthermore, since all children receive health care, the findings do not reflect infants' health.

Wave 3 infants were seen at 7 and 13 months (total N at 7 months is 50, at 13 months 28). The results look almost exactly like those pictured in the left half of Figures 1 and 2: There is a gradual decline for both Mental and Motor Scales, and there are no group differences. Data are shown in Table 0-5.

Home Visit Group: Uzgiris-Hunt Data

We did not plan to analyze the Home Visit Group, for reasons previously listed. Primarily, we did not have time to score mother-child interactions for this group, and the interactions are the major data which should be presented for the Home Visit program at this stage of our study. However, other preliminary data are available and the N for the Home Visit group at 12 and 18 months was sufficiently large as to provide a glimpse about this

group's cognitive competence. The data show tendencies for the Home Visit group to advance more rapidly than the Serial Control infants, see Table 0-6, and Figures 8 to 11. In all probability, a multivariate measure would indicate that the Home Visit group has significantly advanced, relative to the Control group (tests of significance of individual scores changes are not now available). But we emphasize that these data are a preliminary, albeit encouraging, glimpse: For conclusions to be drawn, we would want to demonstrate corresponding changes in mother-child interactions, and also to control for whatever SES and psychosocial differences in mothers attributes that may exist.

TABLE 0-1

Power to Control Childs' Education

Wave 1 (Pilot Wave)	(Tested at 24 Months)	
	Center	Serial Control	Yearly Control
Mean	16.7	15.4	14.8
S.D.	3.28	3.18	3.49
N	15	17	16

t (Center vs Yearly Control) = 1.56, p = .10 (Approximately, 1 tailed test)

Wave 3	(Tested at 12 Months)	
	Center	Serial Control
Mean	16.0	14.4
S.D.	4.34	2.98
N	23	29

t = 1.50, p = .10. (Approximately, 1 tailed test.)

Sample item: "I can improve the schools." High scores indicate a feeling of coping competence

TABLE 0-2

Uzgiris-Hunt: Pilot Wave Means - Age 4 Months *

	Center	Serial Control	F	P	Comment
Scale 1 Mean	6.9	5.8	1.79	19	Trend: Center group favored.
N	16	20			
Scale 2 Mean	5.3	4.9	.10	.75	No difference
N	10	19			
Scale 3 Mean	1.1	1.7	3.62	.07	Trend: Serial control favored
N	17	20			
Scale 5 Mean	9.2	9.1	.00	.92	No difference
N	16	20			
Scale 6 Mean	6.2	6.9	.62	.43	No difference
N	15	20			

TABLE 0-3

Uzgiris-Hunt: Pilot Wave Means - Age 12 Months

	Center	Serial Control	Yearly Control	F	P	Comment
Scale 1 Mean	35.6	45.0	43.5	3.06	.06	Center lower
N	16	19	19			
Scale 2 Mean	25.7	30.3	32.4	3.17	.05	Center lower
N	16	19	19			
Scale 3 Mean	3.4	3.5	3.5	.03	97	No Difference
N	16	19	19			
Scale 5 Mean	25.3	25.1	24.6	.05	.94	No Difference
	15	19	19			
Scale 6 Mean	10.9	11.0	10.6	.05	94	No Difference
	15	19	19			

TABLE 0-4

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Uzgiris-Hunt: Pilot Wave Means - Age 20-22 Months*

	Center	Serial Control	F	P	Comment
Scale 1					
20 Mos. Mean	63.7	63.1	.58	.45	No difference now. Center group was lowe previously
N	13	18			
Scale 2 Mean	48.0	46.4	5.52	.05	Center advanced was lower previously
20 Mos. N	13	18			
Scale 3b Mean	5.9	4.7	4.21	.05	Center group advanced, no difference previously
22 Mos. N	14	18			
Scale 5 Mean	46.0	42.7	3.57	.10	Center advanced no difference previously
20 Mos. N	13	18			
Scale 6v Mean	22.1	21.7	.07	.94	No difference
22 Mos. N	14	18			

*These test ages were combined because groups begin to hit the asymptote for scales between 22-24 months. The test age chosen for each scale is that just prior to the asymptote.

TABLE 0-5

Bayley Mental and Motor Scales Scores for Wave 3 at 7 and 13 Months

7 Months

	Center	Serial Control
Mean Mental PQ	122	125
Mean Motor DQ	116	115
N	20	30

Group differences are not significant

13 Months

Mean Mental DQ	112	111
Mean Motor DQ	111	114
N	13	15

Group differences are not significant

TABLE 0-6

UZGIRIS-HUNT SCALE SCORES FOR THE PILOT WAVE, CENTER, HOME VISIT, AND SERIAL CONTROL GROUPS AT 12 AND 18 MONTHS.

12 MONTHS

HOME VISIT	SERIAL CONTROL
40.4	45.0
29.3	30.3
3.3	3.5
26.9	25.1
26.9	11.0
9.0	19
14	

18 MONTHS

59.4	62.7
44.7	44.1
5.5	4.6
38.8	41.5
20.6	19.0
13	20

NET CHANGE

19.9	17.7
15.4	13.8
2.2	1.1
11.9	16.4
11.6	8.0

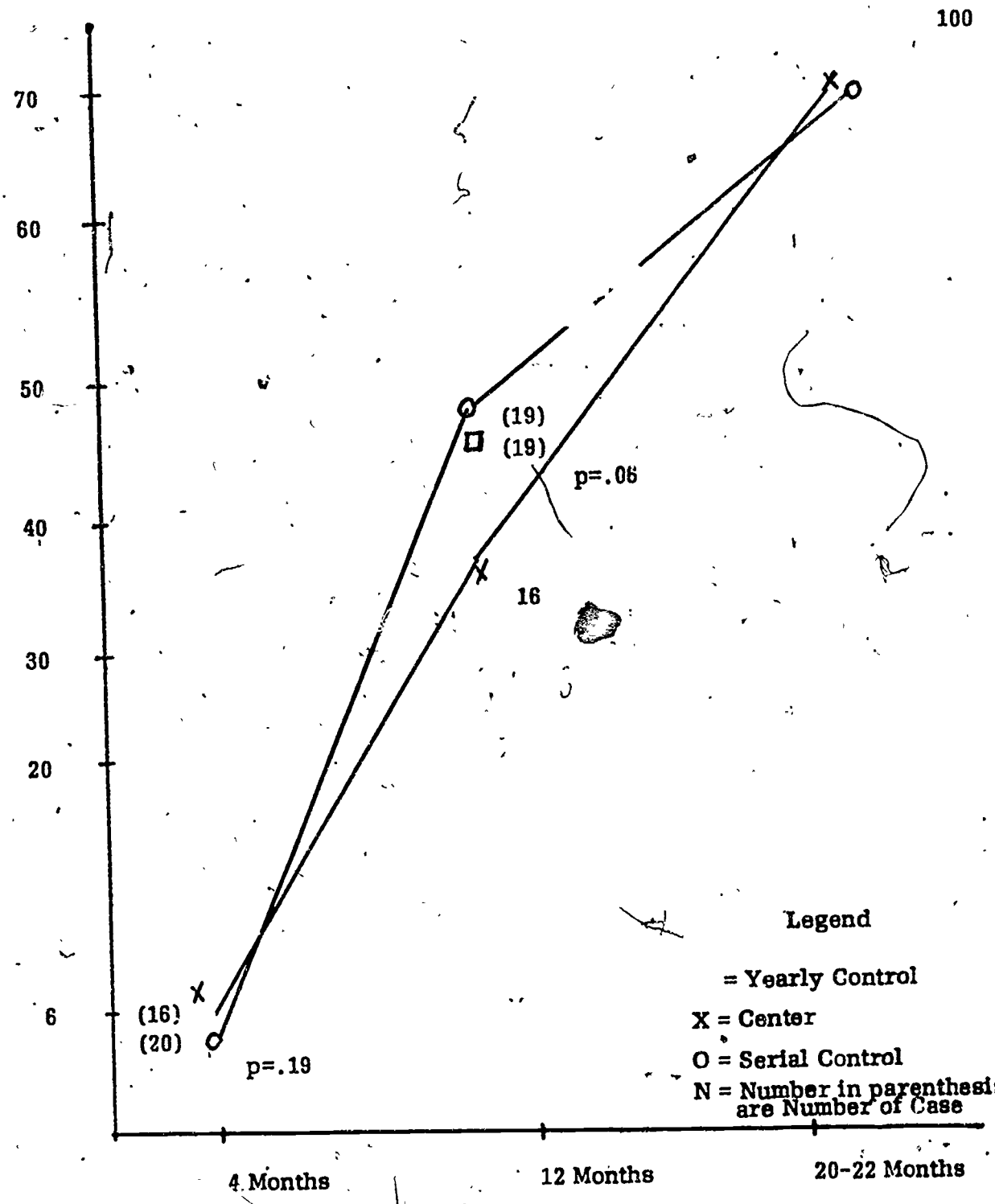

Figure 1. Uzgiris-Hunt Scale 1: Development of Concept of Object Permanence at Ages 4, 12, 22 for Pilot Wave.

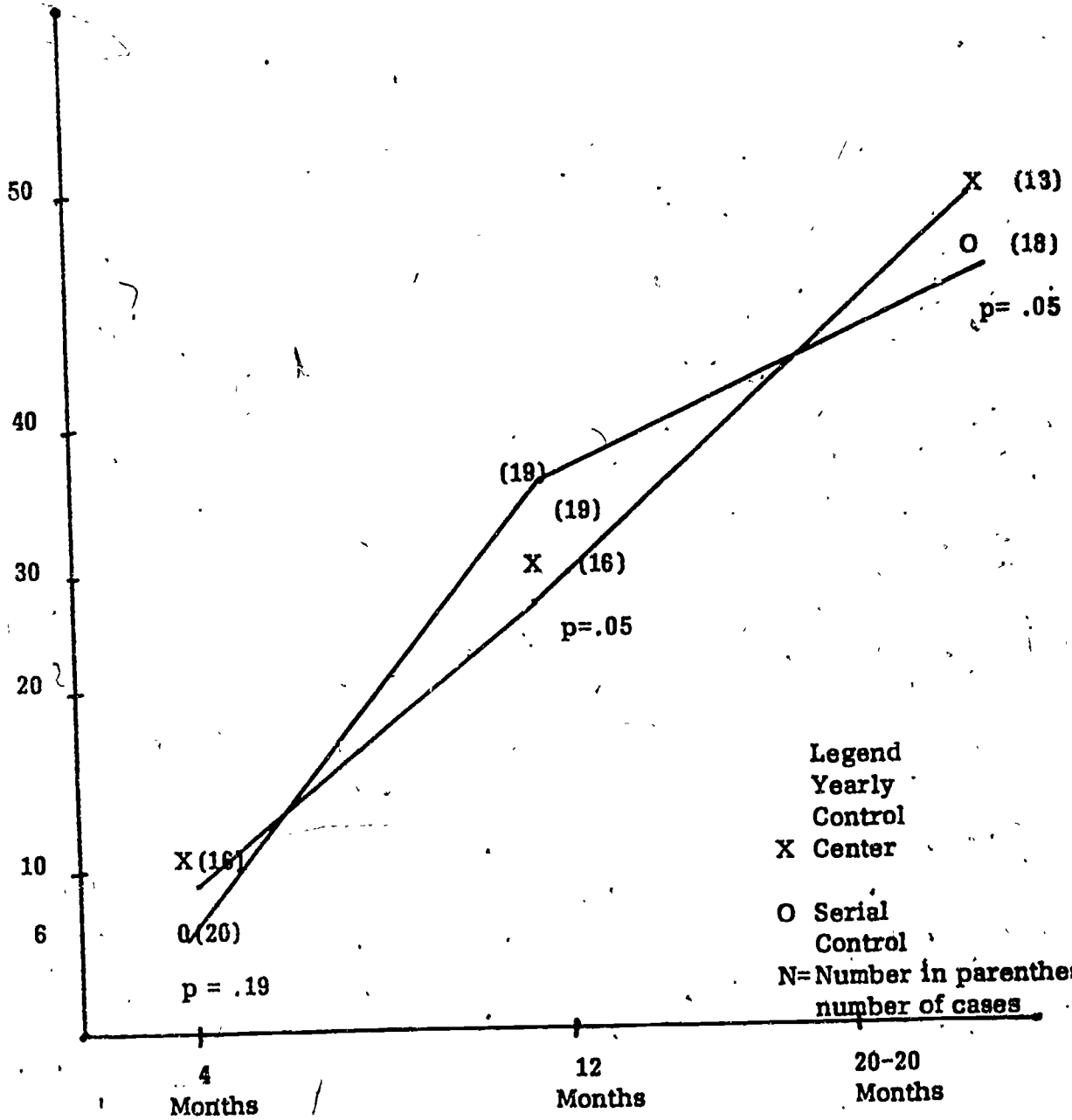

Fig. 2. Uzgiris Hunt Scale 2: Development of Means for Achieving End at Ages 4, 12, 22 months for Pilot Wave.

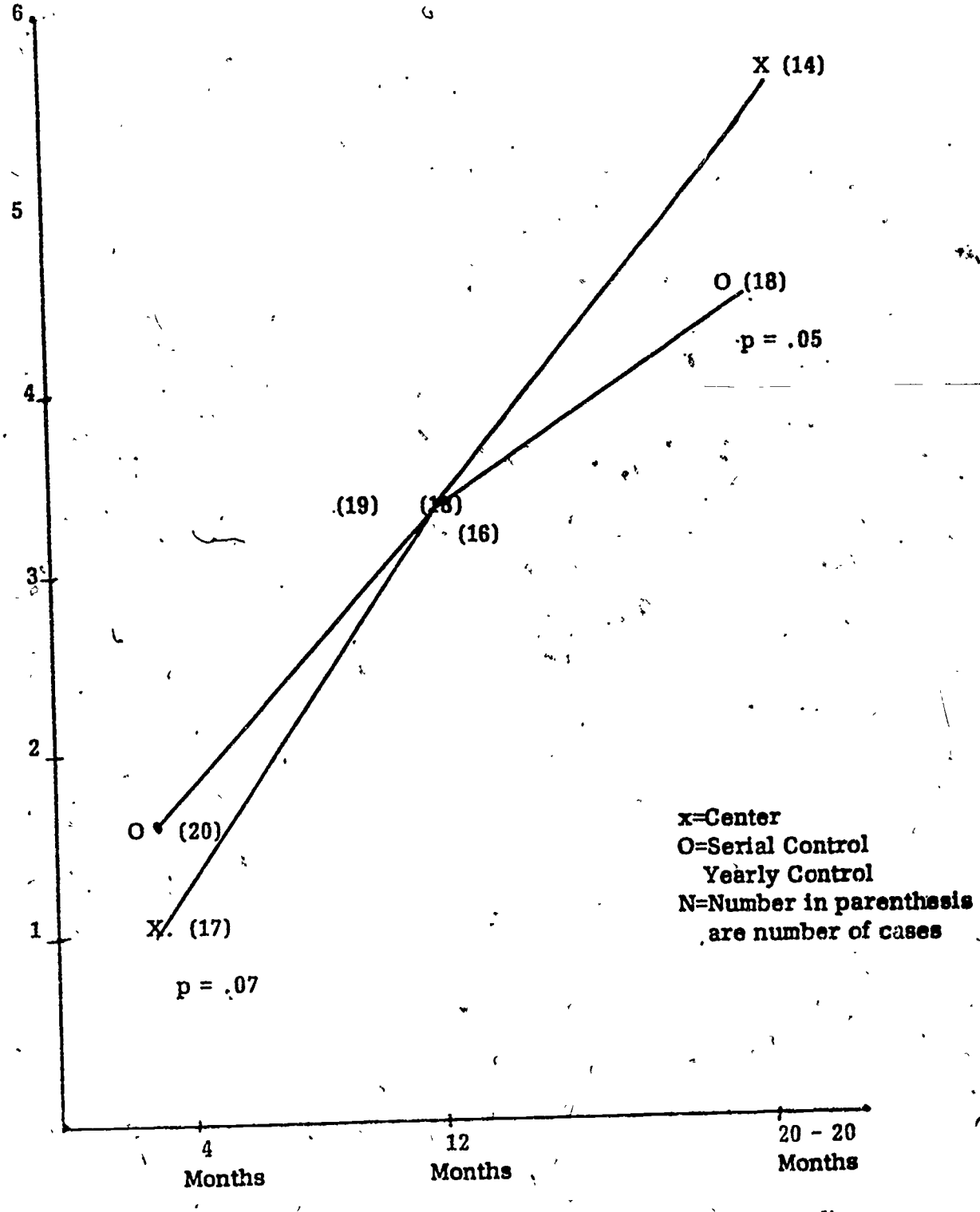

Fig. 3. Uzgiris Hunt Scale 3: Development of Concepts Regarding Objects Use at Ages 4, 12, 22 Months for Pilot Wave.

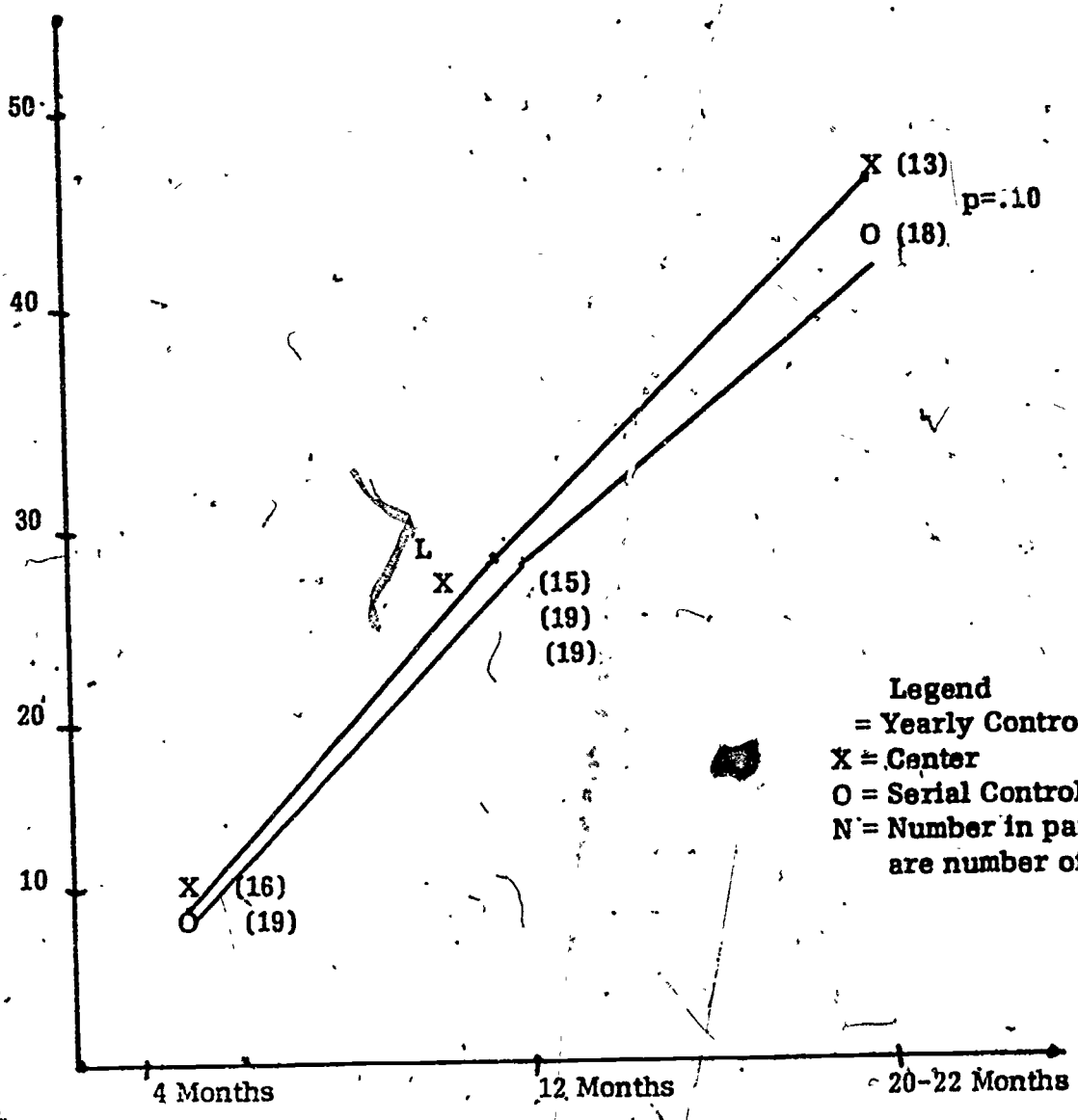

Fig. 4. Uzgiris Hunt Scale 5: Construction of Object in Space at Ages 4, 12, 22 months for Pilot Group.

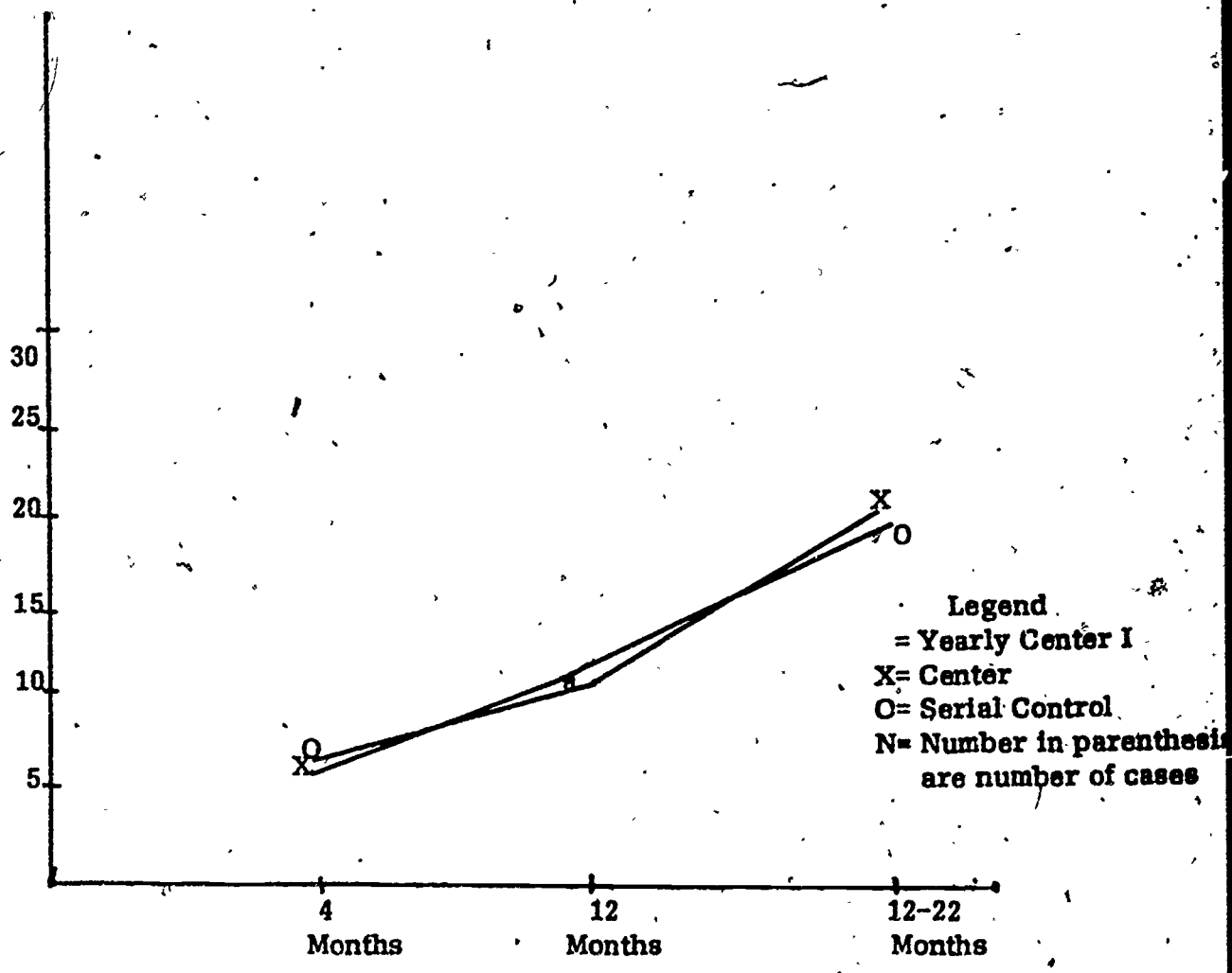

Figure 5. Uzgiris - Hunt Scale 6: Dvelopment of verbal Imitation at Ages 4, 12, 22 Months for Pilot Group.

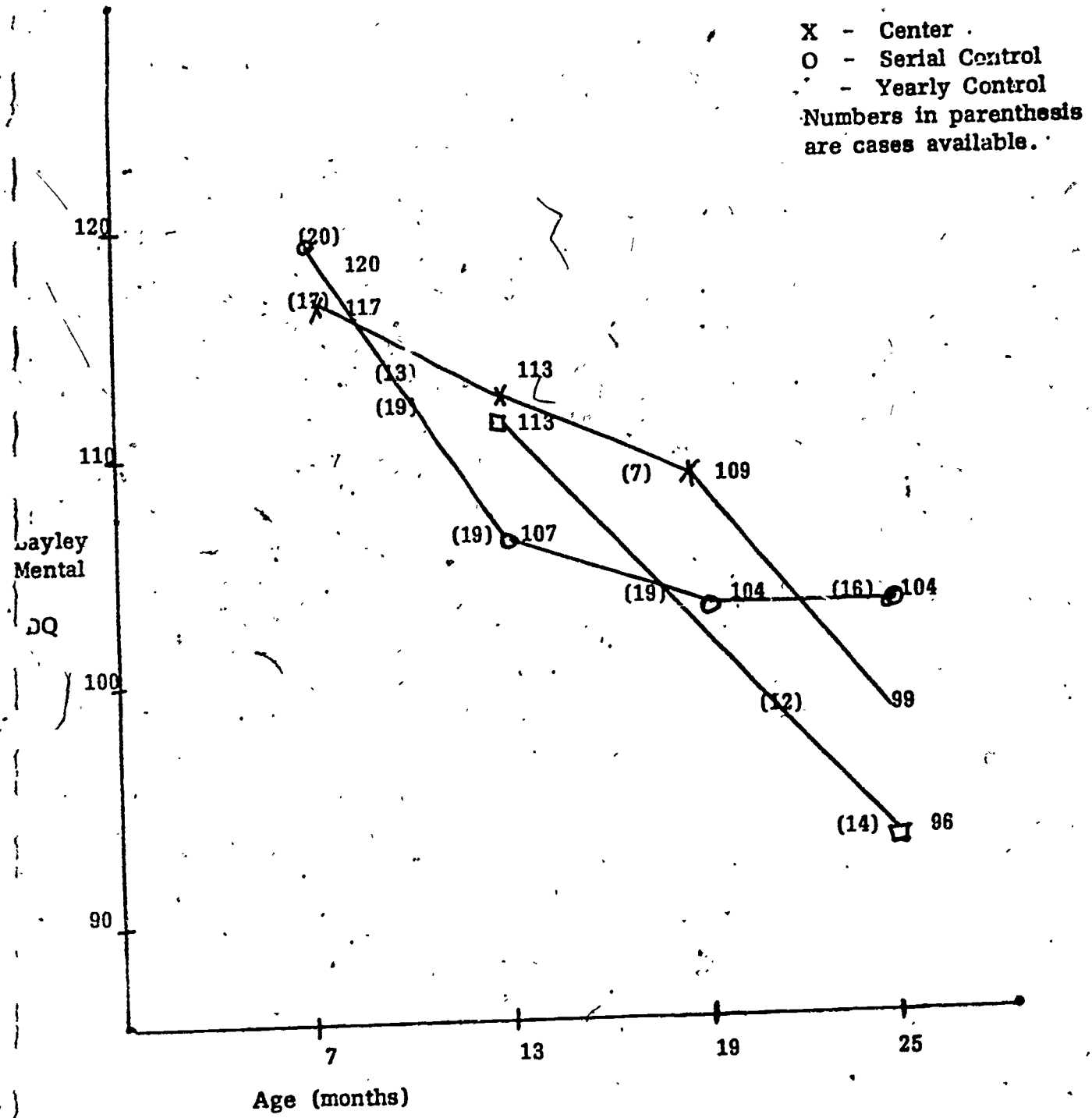

Fig. 6. Bayley Mental Test Scales by group and age - Pilot Wave

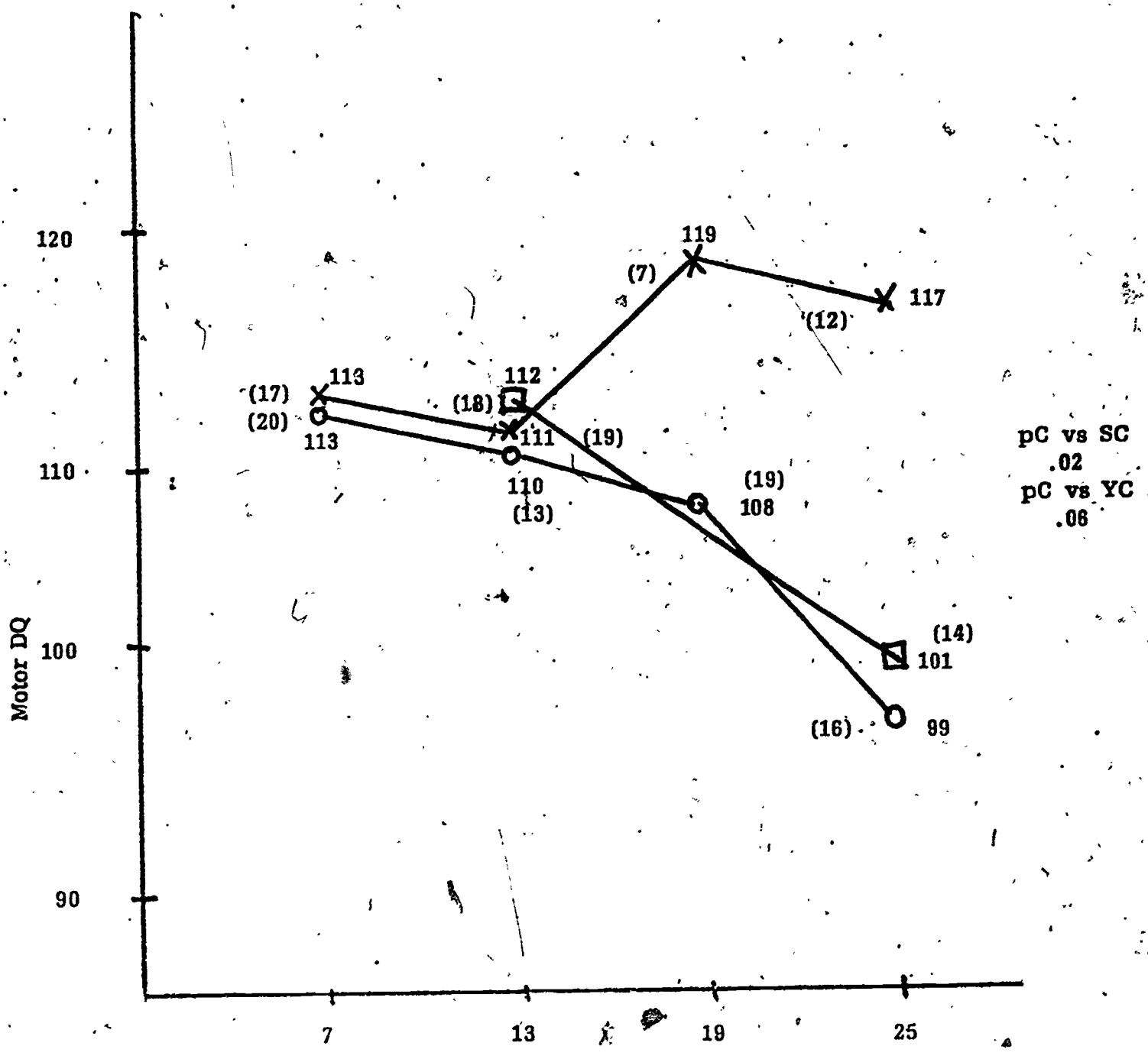

Fig. 7. - Bayley Motor Scale by Group and Age - Pilot Wave

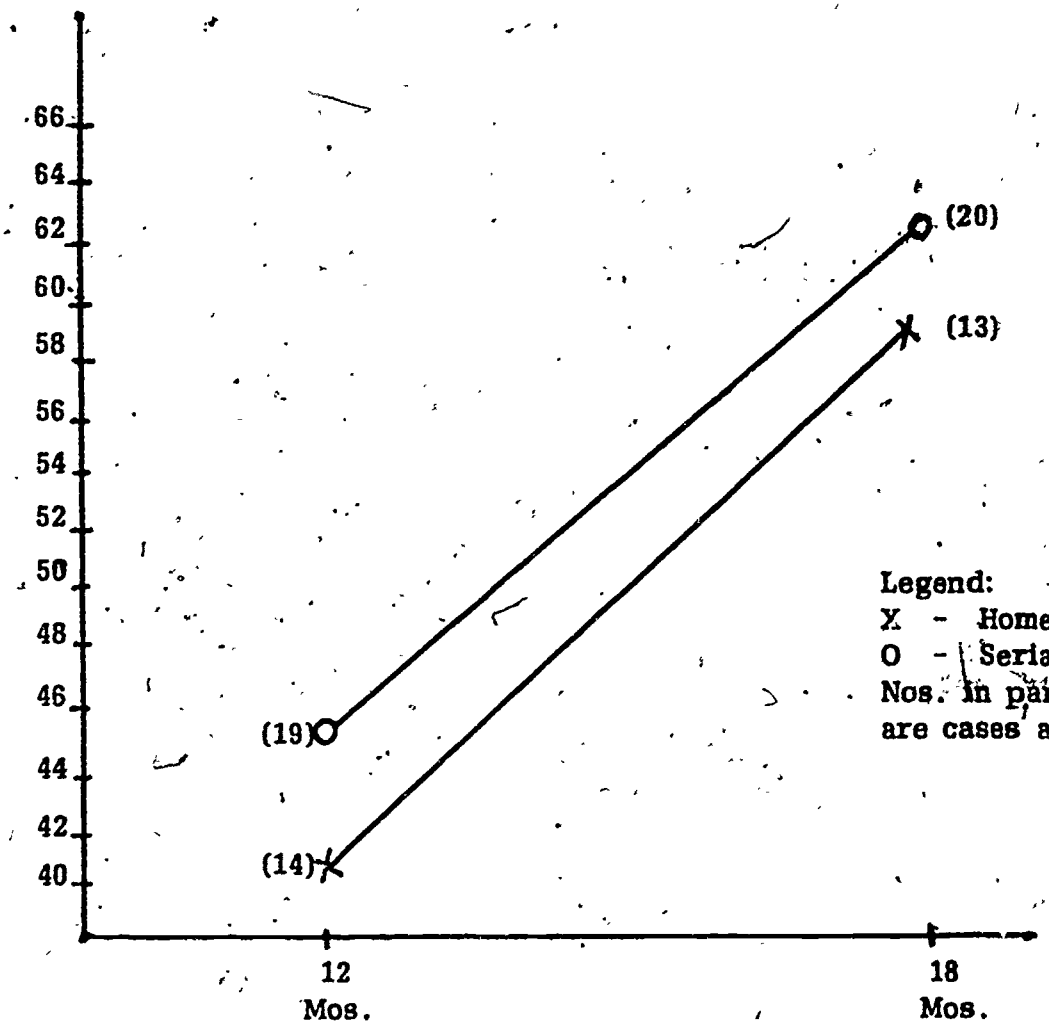

Fig. 8. Mean performance for the Home Visit and Serial Control groups at 12 and 18 months of age on the Visual Pursuit and Permanence of Objects Scale of the Uzgiris - Hunt Scales of Sensori - Motor Development.

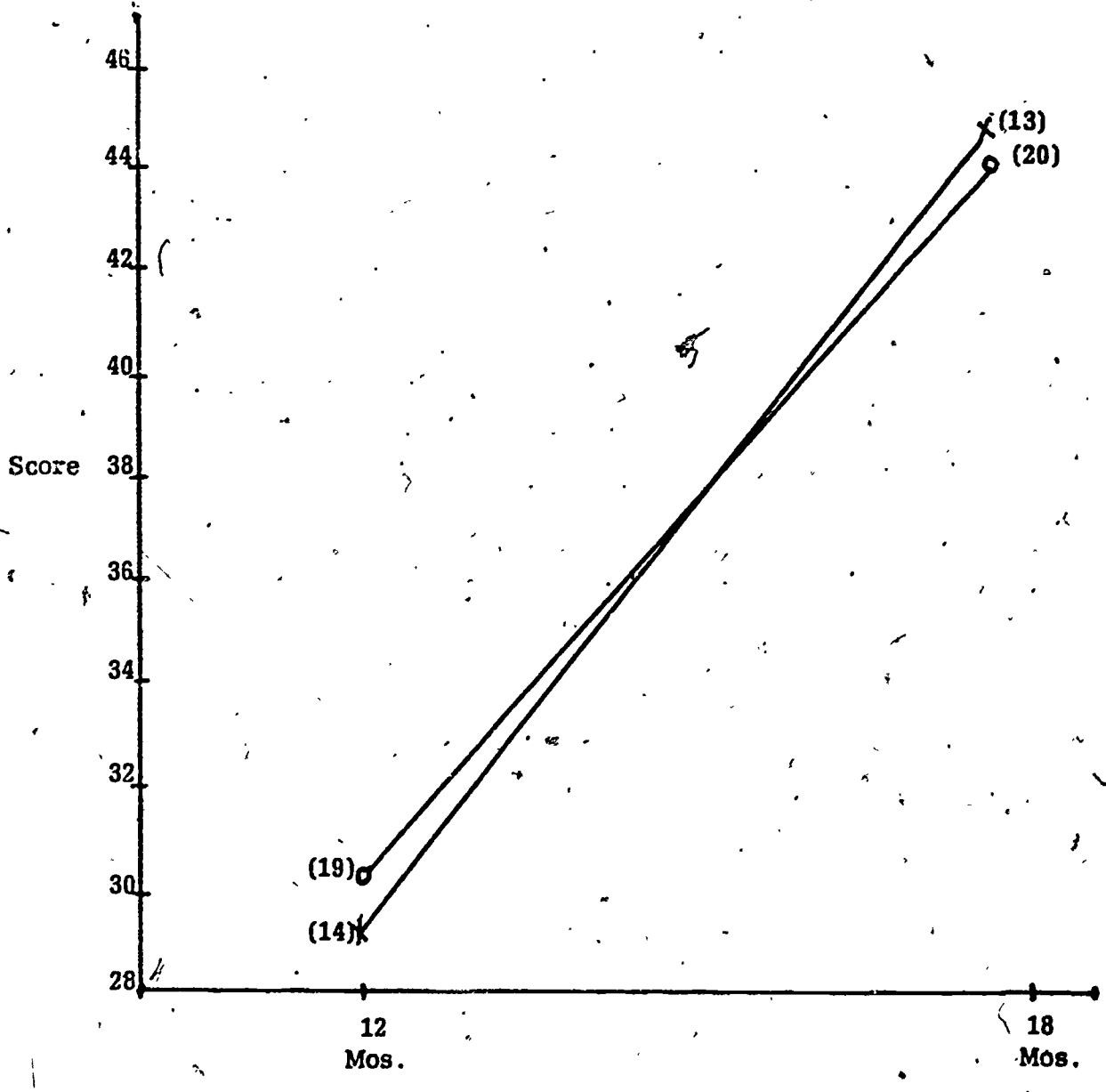

Fig. 9 Development of Means for Achieving Desired Environmental Events Scale of the Uzgiris - Hunt Scales of Sensori - Motor Development.

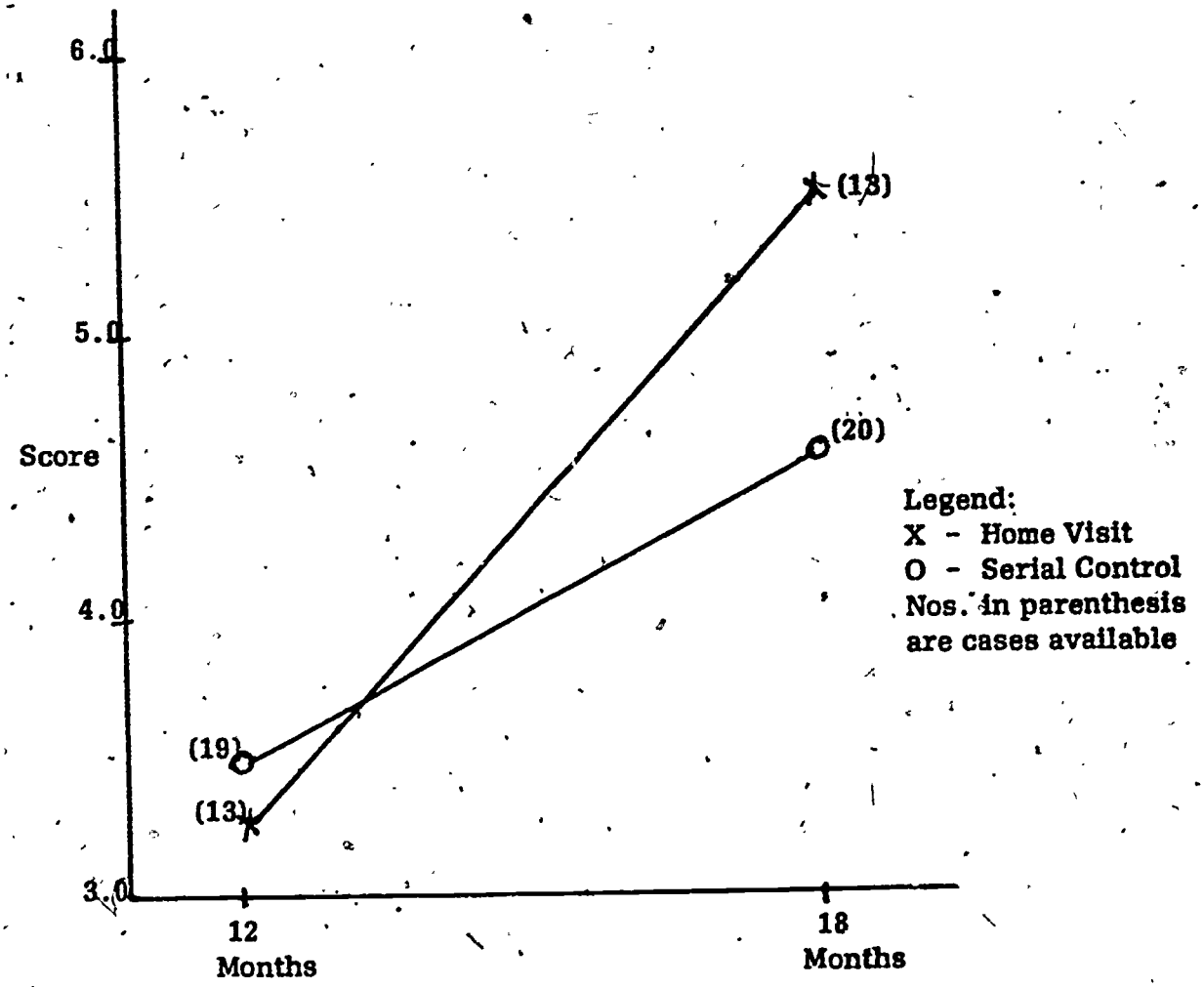

Fig. 10 Development of Schemas in Relation to Object Scale of the Uzgiris - Hunt Sclaes of Sensori-Motor Development.

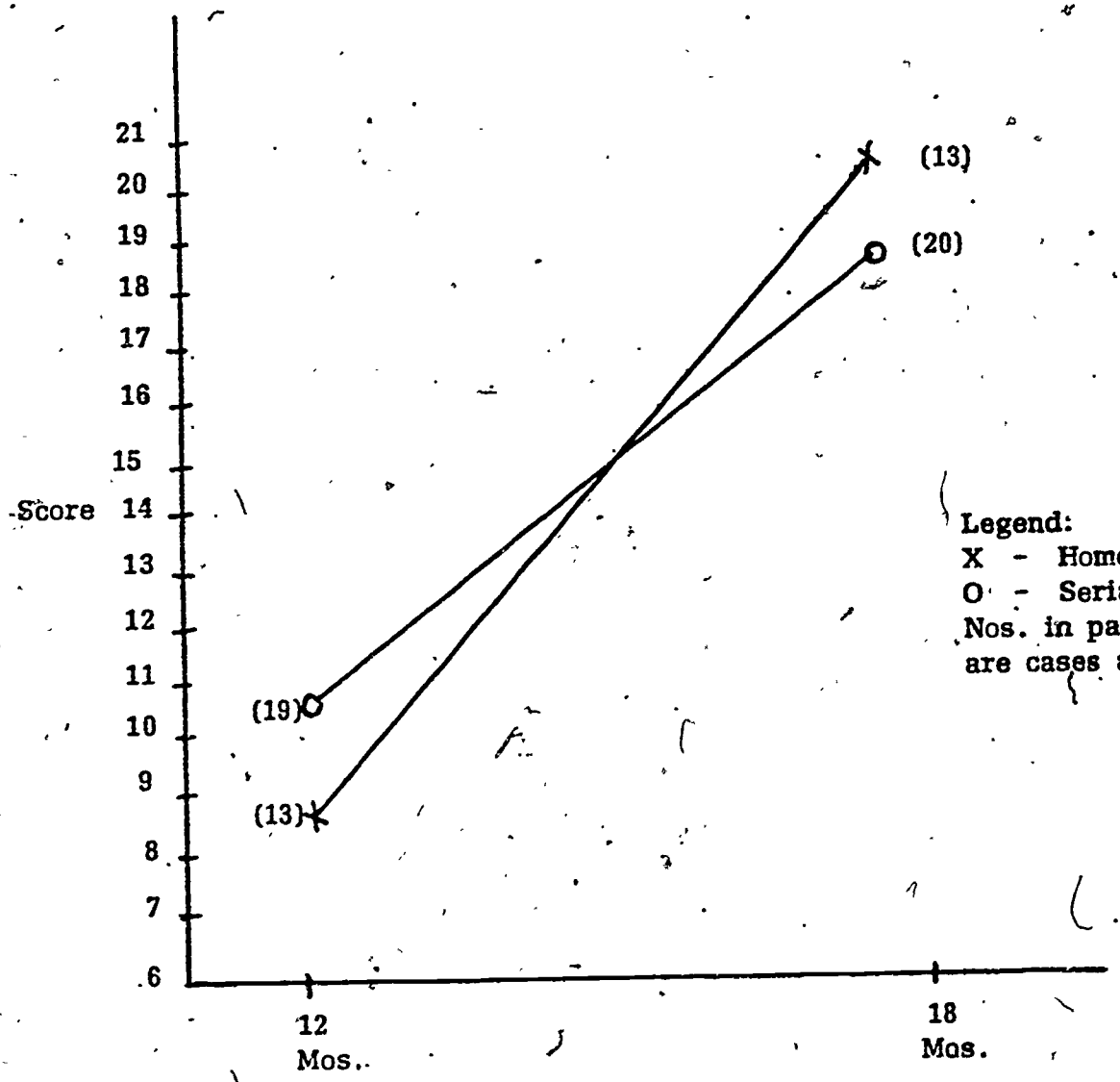

Fig. 11. The Development of Imitation Scale of the Uzgiria - Hunt Scales of Sensori-Motor Development.