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ABSTRACT

This report presents data collected in six of the 16 Home Start sites in operation in the spring of 1973. The major task of the pilot summative evaluation was to try out the measurement battery so necessary modifications could be completed before beginning the actual evaluation in fall 1973. Another purpose was to train a capable field staff and develop quality methods for gathering the data. This report and the supporting statistical analyses undertake three tasks: (1) To assess the spring 1973 measurement battery and field data collection procedures, and to compare them with the fall 1972 battery and procedures to see if progress has been made on problems indentified in "Interim Report II," (2) To identify changes in items and whole scores that have occurred from fall 1972 to spring 1973 for families who participated in both data collections, and (3) To determine if preliminary relationships identified in fall 1972 between children's performance and aspects of their home environment have been replicated and clarified in the spring 1973 data. Based on the outcomes of these analyses of spring 1973 data, recommendations about the final National Home Start Evaluation measurement battery will be made. (Author/CS)

Home Start Evaluation Study

Summative Evaluation Results

Interim Report III

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THE NATIONAL HOME START EVALUATION
INTERIM REPORT III: SUMMATIVE EVALUATION RESULTS

August 30, 1973

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I

INTRODUCTION

Purpose of Summative Report

The data presented in this report were collected in six[1] of the 16 Home Start sites in operation in the spring of 1973. The data come from the pilot phase of the summative component of a three-component evaluation. The major task of the pilot summative evaluation is to try out the measurement battery so necessary modifications can be completed before beginning the actual evaluation in fall 1973. Another purpose is to train a capable field staff and develop quality methods for gathering the data.

This report and the supporting statistical analyses undertake three tasks:

- To assess the spring 1973 measurement battery and field data collection procedures, and to compare them with the fall 1972 battery and procedures to see if progress has been made on problems identified in Interim Report II.[2]
- To identify changes in items and whole scores that have occurred from fall 1972 to spring 1973 for families who participated in both data collections.
- To determine if preliminary relationships identified in fall 1972 between children's performance and aspects of their home environment have been replicated and clarified in the spring 1973 data.

Based on the outcomes of these analyses of spring 1973 data, recommendations about the final National Home Start Evaluation measurement battery will be made, and the final version prepared for use in the formal evaluation phase of the Home Start Program beginning in fall 1973.

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[1] Huntsville, Alabama; Dardanelle, Arkansas; Witchita, Kansas; Cleveland, Ohio; Houston, Texas; and Parkersburg, West Virginia.

[2] The titles "Interim Report II" and "Interim Report I" are used throughout this report to refer to the summative evaluation sections of those reports. A list of all National Home Start Evaluation reports follows the references at the end of this report.

Spring 1973 Pilot Summative Evaluation

The spring 1973 summative design and procedures are summarized in this section, including the experimental design, family selection, measurement battery, data collection, data reduction and statistical analysis. Further information can be found in Interim Reports I and II: section II of Interim Report I presents the rationale for the selection of the measures used in the fall 1972 data collection. Interim Report II presents the results from fall 1972 data. A detailed description of the spring 1973 field data collection operations is presented in Appendix A of the present volume.

Basic design. The formal evaluation, beginning in fall 1973, is designed to include a randomly assigned, delayed entry control group and a Head Start comparison group. However, for the purpose of trying out the measurement battery a control group was not necessary, and only families enrolled in the Home Start Program were included in the current data collection.

A pre- and post-measurement design was adopted, and all available families from the fall data collection were included in the spring 1973 data collection. Three of the nine fall sites had to be dropped from the spring evaluation, so fewer than two-thirds of the fall families were available. Only newly recruited families will be included in the fall 1973 data collection, so the current families will not participate in the formal evaluation even though many of them will still be enrolled in the program.

Family selection. A representative selection of Home Start families was desired, so a random selection process was used where possible. The family was selected as the sampling unit, and all focal children and certain siblings were administered the measures. Only children aged three to six years were included, and in the case of multiple siblings in a single family, preference was given to the older sibling in order to adequately test the ceilings of the child tests. When families had two focal children, both received the child measures. In fall 1972 about half of the focal children selected were scheduled to be in Home Start two years (age three or four, depending on the state age for entry into public school) and the other half were scheduled to be in Home Start one year (age four or five). This corresponded to the family enrollment policy used by local programs at the direction of OCD. If it was known that a focal child was handicapped or non-English-speaking, that family was omitted from consideration.

Basically the same criteria were used in the spring. In fall 1973, only two-year-eligible children will be selected.

Six of the 16 sites were selected for the pilot evaluation by joint agreement of the evaluators and staff from the Office of Child Development. Decisions about sites to be included were based on judgments about their representativeness as well as on certain practical considerations. A nonrandom procedure was adopted at this stage because there were compelling reasons for not including certain sites, including site startup delays, cultural incompatibility of the measures, family migration, and geographic isolation.

In fall 1972, twenty families were randomly selected from each site, using regions within the sites as strata. Twenty additional randomly selected families from each site were designated as alternates to be included in the event any of the first twenty were not available. Final decisions to include alternates in place of regular families were made by the program directors in each site and reasons for the change were noted. All available (100) fall families were included in the spring evaluations and as many additional families as needed were randomly selected to bring each site total to 30 families. The overall sample size for spring was thus 180 families, the same as in the fall.

Random selection of all families was conducted by the evaluation staff in Ypsilanti, Michigan. Rosters listing each family enrolled in the six sites in May 1973 were submitted to the evaluators by program directors, and the families in each site were assigned random numbers within regions in the site. Regions were counties, cities, or sections of cities, depending on the geographic composition of each site. Regions were represented in the final sample according to the overall proportion of families in a site from that region. A list of regular and alternate families for each region was prepared by the evaluators and mailed back to program directors who used it to contact the families for permission to administer the measures. The letter used to obtain parents' permission is presented in Appendix A of Interim Report II, along with initial and final roster forms used in the selection of families. The final lists of randomly selected families who agreed to participate in the evaluation were then given to the evaluation coordinator in each site for use in scheduling evaluation visits and assigning families to community interviewers.

Measurement battery. Eleven measures were used in the fall 1972 data collection, including three children's tests, two child rating scales completed by adults, three parent

questionnaires, a parent-child interaction measure, child height and weight, and a medical laboratory test for trace elements in the child. Each of these measures is described briefly in the section on instrument characteristics below. Detailed information, with appropriate references to the measurement literature, is presented in the Interim Report I, and fall results are presented in Interim Report II. The relationships of the various measures to program objectives are presented in Figure 1, adapted from Interim Report I.

Data collection. Data collection was underway in all six sites by the third week in April, 1973, and all data collection was finished within five weeks of the starting date for each site. All data arrived at the High/Scope Foundation for processing by June first.

Local community interviewers from each site administered all measures to the families. They were selected from local applicants in each of the six Home Start communities by a recruiter from the evaluation staff, taking into account recommendations of the local Home Start director. Applicants so hired were flown to Michigan for a week of intensive training in the procedures for administering the various measures. Families were assigned to community interviewers by site coordinators in each site, using the random lists provided by the evaluators. A monitor from the evaluation team and a site coordinator accompanied each community interviewer on her first family visit and observed the accuracy of procedures, taking corrective action after leaving the home for any problems encountered. A comprehensive set of forms for recording problems and costs were filled out by each community interviewer. Continual telephone contact was maintained by Abt Associates with each site coordinator to answer questions that arose in the field and to correct problems discovered after the data arrived in Cambridge. As soon as the data were screened for completeness by staff at Abt Associates, they were forwarded to High/Scope Foundation staff for processing.

Data reduction. The data were reduced to machine readable form by the High/Scope Foundation data processing staff, following a series of fixed steps. Site, family, and child identification numbers were assigned to each protocol that arrived from Abt Associates, and a log of all received materials was maintained. All protocols are being recorded on microfilm for permanent storage as backup to the computer files maintained on disks and tapes. Formats for entering each item from each test, rating scale, or questionnaire were developed and recorded in a coding manual.

FIGURE I-1: MATRIX OF OBJECTIVES AND MEASURES[1]

Objectives	Measures										
	1 Height & Weight	2 Nutrition Status	3 Food Intake	4 Parent Interview	5 8-Block Task	6 Home Environment	7 PSI	8 Concept Development	9 DDST	10 Schaefer	11 POC
Health Normal Growth	X										
Nutrition Balanced diet		X	X								
Psych-Soc. Services Awareness and use				X							
Education, Families Better "educators"					X						
Parenting skills				X	X						
Educational environment						X					
Education, Child Cognitive school readiness							X				
Number concepts								X			
Language					X				X		
Personal-Social social behavior									X		
Task orientation										X	X
Extraversion										X	X
Tolerance										X	
Motor, Gross and Fine									X		

[1]Updated from Interim Report I.

The data were recorded on magnetic tape cassettes at High/Scope Foundation and then transmitted via telephone lines to disk files at the University of Michigan Computing Center. Software available on the Michigan Terminal System or developed by High/Scope Foundation staff was used for data entry, for verification of some data items and for creation of filler records for missing data. After transmission all the files were printed and manually verified, character by character, against the original protocols.

Next, working files compatable with available statistical programs were prepared. In the process of building files, all items from all measures had to be mechanically screened for wild punches, misplaced columns, missing data, short records, and various other problems that commonly occur in machine data processing. All items which were used in the preliminary analysis were transferred in a corrected form into the master working file. At this stage many items had not been scored "pass" or "fail", nor had subtotals or totals been computed for the various measures. Another file was created to contain the item pass/fail scores, subtotals, and totals, all computed from the first file. Decisions at this point were made about how many items had to be present in order to arrive at a valid score for each measure, and the data for certain families were recorded as missing when necessary so they would be excluded from the later statistical computations. One of several computer scoring procedures was then used to calculate the scores for valid cases.

Statistical analysis. As soon as data were transferred to the working files the statistical analyses began. Basically four categories of analyses were performed:

- First, the number of families and children, missing data, conditions of testing, and other information related to data quality were compiled.

- Second, item analyses were performed for individual measures, such as item response distributions, item percent passing, internal consistency reliability (alpha), item intercorrelations, and principal components factor analyses.

- Third, analyses of whole scores were performed, such as total score means, total score standard deviations, correlations between total scores, and factor analyses of all total scores in the battery.

- Fourth, a series of change analyses were calculated using items and whole scores from families who were in both the fall and spring data collections. The change analyses served two purposes: they helped identify problem items, supplementing the other item analyses, and they helped assess program effectiveness in a preliminary way. Item change was assessed using McNemar's chi-square for correlated proportions on two-way cross tabulations (fall/spring, pass/fail), if the item was scored pass/fail, and using t-ratios for correlated samples if the items were continuous rating scales. Whole score change was analyzed using t-ratios.

For the most part, descriptive statistics were used in preference to inferential statistical tests, since the main focus was instrument development rather than hypothesis testing. No outcome comparisons were made between individual sites; data from all sites were pooled for every analysis relating to family outcomes. Statistical tests were not performed to identify correlations that differed significantly from zero, because of the dubious value of the test when sample sizes are large. For general reference purposes, a correlation of approximately .15 is significantly different from zero at the .05 level when obtained from data for 180 subjects (the Home Start sample size).

All statistical computations were performed via terminals connected to the IBM 360/67 computer at the University of Michigan. The basic statistical package used for most file manipulations and descriptive statistical calculations was the Michigan Interactive Data Analysis System (MIDAS) developed at the Statistical Research Laboratory of the University of Michigan and documented in MIDAS (Fox and Quire, 1972). Additional programs were used for specialized tasks such as computing ages, screening for certain cases or data codes not possible in MIDAS, test scoring and item analyses, and the various other computer operations that were needed. Most of these programs were written by High/Scope Foundation staff and consultants. All factor analyses were performed using program FACTOR, documented in Veldman (1967). This program computes a principal components analysis with a varimax rotation, and allows for missing data through the use of a missing data intercorrelation subroutine. All factors whose roots exceed the eigenvalue cutoff of 1.0 are presented in the tables of factor loadings, unless reported otherwise. The fall and spring item change analyses used in this report are described in detail in Hockman (1971).

II

DATA QUALITY

A number of factors that can affect data quality were examined for the spring data collection in the same manner as had been done for the fall. After the experience of one data collection period, it appears that the quality of the data improved in a number of ways. The factors that might affect data quality to be presented in this chapter are the following:

- Fidelity to random sample lists;
- Characteristics of families sampled;
- Assignment of focal children to site coordinators and Community interviewers;
- Measurement battery length;
- Order of instrument administration;
- Conditions of testing in the homes;
- Incidence of missing data;
- Reliability of coding;
- Beginning and ending testing dates;
- Parental reactions to testing.

Fidelity to Random Sample Lists

A major problem in the fall evaluation was the high rate of substitutions of original families from random sample lists. There was great improvement in this area during the spring data collection with substitutions reduced from 120 families in fall to 53 in the spring. Table II-1 presents the total number of families substituted, the substitutions by site and the reasons for substitutions (as reported by each project). Overall, 19.4% of the families were dropped from the original randomly selected lists. They were replaced by alternates, and about half of the alternates had to be replaced with additional substitutes. Using the original sample size of 180 as a base, a total of 53 families (29.4%) were tested who were not originally selected.

Two sites continued to exhibit disturbingly high substitution rates. In Kansas, half of the families tested were substitutes and in Ohio slightly over a third were substitutes. The remaining four sites had substitution rates ranging from 27% down to 16%.

One of the most commonly reported reasons for substitutions was termination of families from programs, as it had been in the fall. Out of 180 families in the original random sample, however, terminations decreased from 22% in the fall to 8% in the spring. Only 15 families in the sample terminated programs over the two month period in the spring, compared to 39 in the fall. In contrast, the number of families who could not be contacted increased from 1 in fall to 8 in spring. Overall, the number of unavailable families (due to termination or not being able to be contacted) decreased from 40 in the fall to only 23 in the spring. This might indicate an increase in program stability with resolution of major start-up problems or the fact that, by spring, program rosters more accurately reflected the actual enrollment.

Family difficulties were reported to account for 28.3% of the 53 spring substitutions; in the fall 28 out of the 120 substitutions (23.3%) were due to family difficulties. Family illness was the major difficulty in the spring, whereas "mother working" was cited as the most common family difficulty in the fall.

Only five families, or 1.8% of the sample, refused to participate in spring evaluation, a decrease from the already low fall figure of 4.4%. Three of these families were from one site; three programs had no family refusals.

Seven families were substituted on the basis of handicapped or non-English speaking children, a decrease from 11 in the fall. Instructions to the sites emphasized screening out such children before the spring sample was selected, but even though this was not always done, the rate of these substitutions was still low (3.9% of the sample of 180).

Substitutions due to miscellaneous reasons, site errors and unexplained reasons decreased considerably from 33 families in the fall to only three in the spring. "Miscellaneous" reasons were seldom given and the "no reason given" category was not even necessary in the spring due to the more precise information provided by the programs.

This analysis of substitutions to the random sample suggests that the test sample on which the spring data are based is more faithful to the original randomly selected lists given to the community interviewers than was the case in the fall. This may be due to a combination of several procedures instituted in the spring:

- Better screening procedures were used by the programs so that the family rosters submitted to the High/Scope Foundation more accurately represented the program's enrollment, especially in terms of identifying children who could not be tested because of language difficulties or other handicapping conditions.
- Programs received clearer instructions on how to use the sample lists, especially on how to select alternates for families that could not be tested.
- The importance of using the originally-selected family if at all possible was emphasized.
- Local site coordinators hired by the evaluation contractors supervised the testing and assumed responsibility for the scheduling, perhaps resulting in the testing and interviewing of a greater proportion of the original random sample.

Characteristics of Families Sampled

Basic statistical information is presented here to examine the representativeness of the summative sample. Table II-2 presents the number, age and sex of focals and siblings for each site, the average number of focals and siblings per family by site, and totals across all sites. These data

can be compared to the comprehensive statistical information collected as a part of the Information System and summarized in the Program Analysis volume of this report. Results from the Parent Interview provide additional information and can be found in Chapter IV of this volume.

The 181 families making up the spring sample contained 190 focal children aged 3 to 6 1/2 years. The mean age of the test sample was 56.7 months. Fifty-eight siblings, from 3 to 7 1/2 years were also tested. These ages represent expected changes from last fall, when the highest category was 5 1/2 years. The average family tested had 4.0 children with a mean of .39 siblings in the 3-5 year range. If all siblings in the Home Start age range had been tested there would have been approximately 71 siblings tested.

Of the 190 focal children, 98 were boys and 92 were girls, or 52% and 48%, respectively. This is little changed from the fall percents of 51 and 49. Random selection on this characteristic is indicated by agreement with the 1973 Information System report of 53% boys and 47% girls in the entire Home Start population.

The distribution of focal children across age categories is peaked, with a maximum of 43 in the 4 1/2-year category, and a minimum of six in the 3-year category. There were considerable site differences in the age distributions. Alabama had no 3-year-olds, and joined Arkansas in having empty 3 1/2 and 4-year-old categories. Kansas, Cleveland and West Virginia had no 6-year-olds, and these as well as Texas lacked 6 1/2-year-olds. These age differences place restrictions on across-site comparisons, but since such comparisons are not made in this report, the confounding of age with site is not critical. The actual evaluation beginning in fall 1973 will include a control group at each site that will be in the same age range.

Assignment of Focal Children to Site Coordinators and Community Interviewers.

The function of community interviewers was altered significantly from fall to spring. Fall plans called for two community interviewers and one substitute from each site to do both scheduling and testing. In the spring design there was a site coordinator at each program to do all scheduling and to provide local direction. Ideally, three community interviewers then shared the responsibility for all testing.

Table II-3 presents the number of focal children tested at each site by site coordinators and community interviewers. Original spring plans were actually carried out only in Kansas and Arkansas. The site coordinator's role was maintained in West Virginia, but there were only two community interviewers to complete all the testing. Site coordinators for the remaining programs accepted varying degrees of the testing burden, from two families for the Houston site coordinator to ten for the site coordinator of Ohio. The change was due in three sites to the loss of community interviewers; in one site the site coordinator tested two families even though there were three community interviewers.

Measurement Battery Length

A one-hour maximum for child testing time was specified in the RFP and generally adhered to in the spring evaluation. Table II-4 sets forth the mean testing time for each instrument, and the mean total time for all instruments. Information was provided by the community interviewers who recorded the actual test administration time. Times did not include completion of observations, rating scales or tester logs, nor did they cover time required to become acquainted with families, establish rapport, prepare materials, and so forth.

Administration of the child test battery required an average of 50 minutes in the spring, as compared to 47 in the fall. The longest instrument, the DDST, average 22 minutes in the spring, up from 18 in the fall. PSI administration took 13 minutes (a slight decrease from 14 in the fall), and the CDT required 12 minutes (compared to 11 minutes for the ETS Enumeration Test which it replaced). Height and Weight together were obtained in three minutes (slightly less than the previous four). The High/Scope HES and Parent Interview required about 18 minutes each in the spring. This reflects an increase from 14 and 12 minutes respectively, due to revisions which substantially lengthened the spring instruments. Revisions accounted for increased Food Intake time to seven minutes (up from five in fall). The SBI took only five minutes (down from about six in the fall). Mother-child interaction in the spring 8-Block task typically took eight minutes (down from 10 in the fall); the total 8-Block administration time averaged 20 minutes (comparable fall data are not available). Total family involvement in spring testing and interviewing thus averaged 108 minutes. Although this appears to be 14 minutes longer than the fall total time, the fall total did not include the complete 8-Block task.

A major change in the spring procedures was a reduction in the number of testing visits from three to two. Each

visit was necessarily lengthened--65 minutes typically for visit one and 43 for visit two, as compared to visits of 29, 42 and 22 minutes in the fall (these times do not include administration of the PSI and Height & Weight to siblings on the second visit). It was felt that fewer disruptions to families and program personnel compensated for the increased length of spring visits.

Order of Instrument Administration

Instrument administration for the two spring visits permitted mother and child involvement on both occasions. Community interviewers were instructed to follow the schedule below, although they were permitted to modify it if circumstances made it necessary.

First visit:
- Denver Developmental Screening Test - Focal Child
- Concept Development Test - Focal Child
- Schaefer Behavior Inventory - Mother
- Food Intake Questionnaire - Mother
- High/Scope Home Environment Scale - Mother

Second visit:
- Preschool Inventory - Focal Child and Sibling
- Height and Weight - Focal Child and Sibling
- 8-Block Sort Task - Focal Child and Mother
- Parent Interview - Mother

Following visits:
- Tester Logs
- High/Scope HES Observation
- Pupil Observation Checklist

Conditions of Testing in the Homes

Homes were not expected to provide ideal testing environments in either fall or spring, but improvements were made in standardizing conditions during spring data collection. Information was obtained through the use of tester logs completed after each visit, and results are summarized in Table II-5. It was found that mothers stayed with their children most of the time: During 87% of the spring visits and 91% of the fall visits the mother was present during the testing. Altogether in spring there were an average of five people in the room during testing visits, and 36% of the homes were rated "noisy." This is a surprising change from fall, when four people typically were present yet 77% of the homes were considered to have a high noise level. Community interviewers encountered special problems

on fewer occasions in the spring--during only 25% of visits as opposed to 33% before. In the fall, mothers were found to coax and criticize their children frequently during testing, but spring community interviewers were instructed to tactfully discourage such adverse interference. Home visitors were requested to keep siblings occupied so the child being tested could concentrate without disturbance. During spring training emphasis was placed on potential problems and this may have affected the expectations of the community interviewer so they were less impressed by disturbances and noise than were the fall testers.

Incidence of Missing[1] Data

It is useful to compare the quantity of missing data from fall and spring to determine whether improvements were made in the number of completed instruments. Similar criteria were used to judge missing data in both evaluations: For individual item analyses Ns could vary without affecting other items and therefore no effort was made to delete individuals on the basis of having too few items completed to be used in the total score (see the introduction to Chapter III for a discussion of this missing data issue). Table II-6 presents the number of completed instruments for each measure, the number of missing instruments, and tester comments explaining why certain tests were missing.

Examination of the totals indicates 119 missing instruments in the fall and 66 in the spring. This change was largely a result of dropping the ETS Enumeration Test from the battery since it accounted for 53 of the missing fall measures. If both the Enumeration Test and its spring substitute, the CDT, are subtracted from the total missing, figures for fall and spring are 66 and 60, respectively. There was, thus, very little improvement from fall to spring. The greatest improvement in spring data collection was with child measures, mainly because of the decrease of child refusals. Parent questionnaires, however, resulted in a greater quantity of missing data in the spring. Greater effort will be made in the upcoming data collection to learn the reasons for missing parent data, and to determine reasons now listed in the "other" column of the table.

Reliability of Coding

The conditions of testing in the home and the amount of missing data can both affect the accuracy and generalizability of results. Another very important aspect of data quality is the reliability of test administration and scoring. Estimates of this reliability can be found in the volume on Field Data Collection Procedures. Since the coding of the

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[1] The item "missing" encompasses any data that was not included in the final computor files used for statistical analyses. Some of the missing scores were not collected from the families, but many were deliberately excluded from the analyses because of, say, child refusals on too many items.

8-Block tapes was not done in the field, more extensive reliability checks were possible. A sample of 16 tapes was selected from the 169 coded by the two trained 8-Block coders. These were then coded by both coders working independently. Since the events were coded in sequence it was possible to determine the extent to which the coders agreed on the assignment of specific events to the coding categories. This procedure resulted in the "event-by-event" percent agreements reported in Table II-7. If any analyses of a sequential nature are to be performed (e.g., the relative frequency of specific combinations of categories such as "Mother request talking" followed by "Child talk"), it is important that the reliability of specific events be established. When analyses are based on total frequencies (e.g., total amount of "Mother request talking," or of "praise"), it is common practice to assess reliability by comparing the total frequency counts obtained by the two coders for each category. Reliability calculated in this fashion resulted in the percent agreements by total frequency reported in Table II-7. The percentage agreement calculated in this fashion is never lower than the percent agreement calculated by the more rigorous event-by-event method.

Most of the categories were coded with a reasonable degree of reliability. Only four were below 50% agreement according to the event-by-event-procedure. On the other hand, only seven of the categories (out of 28 categories for which reliability could be calculated) obtained percent agreements of .70 or above. This range of reliabilities is typical of naturalistic observation studies in which a complex coding system is used. Greater accuracy could be obtained if transcriptions were made of all tapes, but the sheer volume of tapes collected in the Home Start evaluation makes this impractical.

Beginning and Ending Testing Dates

An effort was made in the spring to adhere strictly to testing deadlines as a result of scheduling problems which occurred in the fall. Originally, plans called for testing to begin April 23rd and continue through May 18th. It was necessary to delay commencement of testing for one week in Cleveland because of Easter vacations and in West Virginia testing continued two extra weeks because two community interviewers had to travel great distances for many of the visits. All data collection was completed by May 29.

Parental Reactions to Testing

Reactions to individual instruments were obtained in the Parent Interview, where parents were asked which of the

instruments they liked or didn't like, and, if they disliked any, why. Their responses are presented in Table II-9. Overall, parents reacted favorably to the test battery: An average of 97% voiced approval for both child measures and parent questionnaires. Most unpopular of the child measures was the 8-Block (6% said they didn't like it), followed by the DDST (5% expressed dislike). The major complaint from parents was that the instruments were too difficult for the child, a sentiment expressed by at least four parents for every instrument. (If such complaints were voiced during the testing, community interviewers had been instructed to explain to parents that the testing of older children made it necessary to have a few difficult items). Four percent of the parents voiced dislike of the HES and Parent Interview. Their main concern was that the questionnaires were too time-consuming. Test revisions for Fall 1973 involve substantial shortening of the Home Environment Scale.

Summary

The factors examined to assess the quality of the Home Start data lead to the conclusion that the spring data are, in most respects, of higher quality than the fall data. This is not to say that there is no room for improvement, however. Continued care must be exercised in obtaining the randomly selected group of families for the evaluation. This is particularly important during the 1973-74 data collection since the population from which the Home Start and control samples is to be taken is restricted to the entering families.

III

ANALYSES OF CHILD MEASURES

The internal characteristics and whole score characteristics of each child measure are examined in this chapter. The reason for examining internal characteristics is to identify strengths and weaknesses of individual items before combining them into total scores. If faulty items are used to construct a total score, there is good reason to expect the total score to be faulty. An item can be faulty because it fails to discriminate properly among persons, because it yields erratic scores over time, or simply because it is difficult to interpret. Many items identified in this report as having undesirable characteristics will be omitted from future versions of the measurement instruments, while others with less serious problems will be revised before use in the formal evaluation in fall 1973. The findings reported here for measures administered in spring 1973 are also compared to the findings from fall 1972 data in order to gain some insight into the stability of internal characteristics across time and persons.

The internal characteristics looked at for each instrument include:

- Response distributions across each item;
- Percent of persons passing each item;
- Intercorrelations among items;
- Factor structure among items;
- Internal consistency reliability;
- Fall to spring item characteristic changes.

Descriptive statistics for whole scores are examined to identify the ability range and precision of each measure. Measures must be neither so difficult that all children score at the test "floor", nor so easy that they score at the test "ceiling"; rather, children's scores should be evenly spread

over the lower middle range of the measure to insure enough unpassed items remaining to reliably record child growth occurring during the program year. Also, the standard deviations of whole scores should be small compared to expected increases due to program effects, to insure enough precision to detect real intergroup differences with the available number of families in the evaluation. The descriptive statistics presented in this section for each of child total and subtotal scores include:

- Means;
- Standard deviations;
- Standard errors of the means;
- Fall to spring change in means where possible.

Relationships between totals and subtotals across different measures in the battery are examined below, in Chapter V.

The analyses of each instrument are presented in two sections. The first, "spring 1973 item analyses", reports the results in terms of response distributions, percent passing by age, intercorrelations, factor structure, reliability, and whole score descriptive data. Of particular interest in these discussions are comparisons with comparable analyses of the fall 1972 data. The second section reports analyses of fall to spring changes for each instrument. For these analyses the sub-sample consisting of children who were tested both in the fall and the spring is used. Internal consistency and test-retest reliabilities are reported for this sample. Then measures of change or growth from fall to spring are presented, first in terms of total scores or scale scores, then in terms of individual items. The results of these spring 1973 and fall-spring analyses are briefly summarized at the end of the section on each instrument.

Preschool Inventory (PSI)

The PSI is a general measure of children's achievement in areas that are often regarded as necessary for success in school. Children are asked questions of general knowledge (e.g., "What does a dentist do?") and basic concepts (e.g., "Put the blue car under the green box."). The 32-item version of the PSI was used in this evaluation. The only modification made since the fall administration was in the scoring. Several little-used categories were omitted from the scoring procedure used in the fall. This had no effect on the pass-fail scores reported here.

Spring 1973 Item Analyses

Response distributions. The percent of children responding in each response category for each item is given in Table III-1. A comparison of the fall and spring frequencies for each response category within the total fall and spring samples for the PSI items reveals a definite reduction in the number of refusals and no responses from fall to spring. The average number of "no response" in the fall was 1.43, but in the spring the average number of "no response" was only .67. The average number of refusals in the fall was .55, but the average number of refusals in the spring was .18. When a child refuses to answer an item or makes no response to an item, it is impossible to say whether the child actually knows the answer to the question or has not replied because of shyness, hostility or some other reason. Thus, the proportion of children responding correctly to each item in the spring may be a more accurate estimate of the children's knowledge of the content of the item because of the reduction in refusals and no responses. The "Don't know" category frequency also decreased from a mean of 3.7 in the fall to 2.2 in the spring.

Percent passing. The reduction in the refusal rates and the "no response" rate was accompanied by an increase in the percentage passing each item. Two other factors may be related to the general increase from fall to spring in percentages passing the PSI items. First, the average age of the total spring sample was almost seven months older than the average age of the total fall sample (56.7 months in the spring as compared with 50.1 months in the fall.) The percent passing each item should increase with age. Second, one hundred children included in the total spring sample were also included in the fall sample. Thus 54% of the fall sample was retained in the spring sample, or, put another way, 53% of the

spring sample had been previously tested in the fall. Changes in item responses for this test-retest sample of 100 children will be considered in a separate section.

The percent of children who passed each PSI item was, for the most part, higher in the spring than in the fall. The median percent passing an item in the fall was 41.5%; in the spring, the median was 47.5%. The range of percents passing was greater in the spring than in the fall. In the spring, the lowest percent passing for any item was 10% and the highest was 86%, which is a range of 76 percentage points. In the fall, the corresponding figures were 6% as the lowest percent and 73% as the highest, which is a range of 67%. Although the percents passing PSI items increased, there is still considerable room for growth on the test.

There is a clear trend toward increasing percent passing as age increases (see Table III-2). If anything, this trend is even more distinct in the spring data than in the fall.

Correlations. An intercorrelation matrix of the 32 PSI items and the item-total correlations were calculated and are presented in Table III-3. (The item-total correlations were corrected for overlap). Only four items correlated less than .20 with total PSI score. These were item 25 ("Point to the one that is most like a tent"), item 1 ("What is your first name?"), item 22 ("Point to the second one"), and item 23 ("Which of these two groups has less?"). Items 1 and 25 were extremely easy in the spring. Both items 22 and 23 correlated less than .20 with total PSI scores in the fall sample as well.

In both the fall and the spring samples, items 6 ("Put the blue car under the green box") and 19 ("Point to the middle one") correlated highest with total score. Total score on the PSI, therefore, may be strongly influenced by knowledge of color and position. These two items also load on a substantial number of factors (see below).

Factor analyses. In the fall, the factor analysis of the 32-item PSI failed to confirm the four factors identified by ETS although it had been reported by ETS that factor analyses did not support the use of separate subscores. The spring factor analysis of the PSI items again failed to find distinct factors.

In the fall, 12 factors were extracted that accounted for 63.9% of the total variance and in the principal components solution the first factor accounted for 18% of the total variance. In the spring, 10 factors were extracted that accounted for 58.3% of the total variance. The first factor in the principal components solution accounted for 20% of the total variance. Thus, in the spring as well as in the fall,

factor analysis of the PSI items suggests that the instrument is measuring one general factor that might be termed "school readiness". The factor loadings for all spring items on the ten factor solution are found in Table III-4, and a summary of the items loading highest on each factor is found in Table III-5.

As can easily be seen from the results of the several factor analyses, the PSI is factorally complex and criteria other than internal factor analyses of item responses are necessary to obtain a clearer picture of the abilities or constructs being measured. Two approaches have been used to investigate the meaning of the PSI. First, at the item level a subset of PSI items were selected for inclusion in a factor analysis with a subset of similar and/or seemingly less complex items selected from the DDST. The results of this analysis are reported in Chapter V. Second, whole scores on the PSI were calculated for each child. These scores were then intercorrelated with other Home Start variables from the cognitive, emotional, social, and environmental realms. The factor analysis of these intercorrelations is also reported in Chapter V.

Reliability. The total score on the PSI for each child was computed by summing the number of correct responses for that child. The resulting scores are highly reliable from an internal consistency point of view. The alpha coefficient for the spring scores was .85. This compares very favorably with the fall alpha of .83.

Whole score descriptive data. The means, standard deviations, and standard errors of the PSI total scores from the spring sample are presented in Table III-38 by age and in Table III-39 broken down by age and sex. Except for the tie of a mean PSI score of 11.0 for the 3 1/2-year-old children and 4-year-old children, there is a very definite increase in average PSI score occurring with increase in age. The mean for the 6 1/2-year-old children was 21.0, which indicates that the ceiling of the test has not yet been reached. In the fall, the PSI correlated .39 with age; this positive relationship increased in the spring to a correlation of .58. When the age groups were divided by sex, the males scored slightly higher, on the average, than the females, for all age levels except for 6 1/2-year-old children. There is a perfect correspondence between the rank order of ages and mean PSI for the girls, but, for the boys, there were inconsistencies found at the youngest and at the oldest ages. The females were also more variable in their test performance than were the males.

Fall-Spring Change Analyses

Sample size. Of the 100 children included in both the fall and the spring Home Start testing, 65 children responded to all 32 PSI items both in the fall and in the spring and 84 children responded to 29 or more items. The item change analyses are based on the sample of 100. There was a decrease in number of items omitted from the fall to the spring administration, perhaps partly as a function of the children's increased age and/or familiarity with the testing procedures, and partly as a result of better trained community interviewers.

Reliability. If the spring administration represented a more favorable testing situation, an increase in the internal consistency reliability may be expected since the coefficient alpha is sensitive to sources of measurement error present within the testing situation (Nunnally, 1967). When the fall-spring sample of 84 children is used, the alpha coefficient was .81 in the fall and .85 for the spring administration. When the entire samples are considered (so that the fall sample includes children who were not tested in the spring and the spring sample includes children not tested in the fall), alpha in the fall was .83 and in the spring .85. In each instance the spring reliability is greater than the fall reliability, which may be a result of a reduction of measurement errors after the novelty of the initial testing situation.

If the abilities measured by the PSI are assumed to be stable over time, and it can further be assumed that the mean and variance remain constant, then the test-retest correlation coefficient can be considered as a measure of reliability. The test-retest correlation for the fall-spring sample (N=84) was .70.

Because of the importance of assessing change over time, the difference scores (between spring and fall testing) should also be reliable. The combination of high internal consistency reliabilities for the fall and spring administrations and a relatively high test-retest correlation, however, results in low reliability of the difference scores. The reliability of the difference scores was .45 according to Lord's (1963) formula for unequal variances.

Average growth from fall to spring. The means and standard deviations from the fall and spring administrations, and for the difference scores, were as follows for the fall-spring sample (N=84):

	Mean	SD
Fall administration	12.29	5.52
Spring administration	15.76	6.26
Difference scores	3.48	4.58

$t = 6.92$, $df = 83$, $p < .05$

There was, thus, a significant increase in mean PSI score for those children who were tested on both occasions. This difference is undoubtedly a function of a combination of factors including increased familiarity with testing, familiarity with the particular test (although six months is a long test-retest interval), and effects of the Home Start program on the abilities measured by the PSI.

Stability and change in item response. The fall PSI item responses have been cross-tabulated with the spring responses. These cross-tabulations are presented in Table III-6 along with the fall item percent passing, the spring item percent passing, the difference between the spring and fall percents passing and the chi square for correlated proportions to indicate whether the change in item response from fall to spring was significant. The complete fall-spring sample of 100 children was used for these analyses, and omitted items were coded as wrong.

The items in Table III-6 are listed in order of increasing frequency of the (--) cell. The most difficult items (assuming that a child is more likely to fail a difficult item twice) appear toward the end of the table, and the items appearing early in the table are those for which not much growth is possible. Of particular interest in these tables are the second and third cells (+- and -+). A high (+-) percent suggests that there may be something wrong with the item, since if a child "knows" something in the fall he should also "know" it in the spring. The (-+) percent is interpreted as a growth or developmental index since this is where children will score if their performance improves over time.

The first three items on this list deal with knowledge about one's person: Knowing one's first name, where one's shoulder is, and what is a knee. At least three-fourths of the children got each of these items correct in the spring although only slightly half of the children got these items correct in the fall. For each of these items, there was a significant increase, that is, significantly more children went from incorrect to correct response on the item than from correct to incorrect.

One other item ("what is this?"-elbow) required knowledge about one's person. This item also showed a significant increase although just slightly less than 60% of the children answered this item correctly in the spring testings. (There was also a significant increase on "how many toes", although this continues to be a very difficult item).

The next two items on the list were answered correctly by at least half the children in the fall and at least half the children in the spring, but these were not necessarily the same children. The large frequencies in the (+-) cell may reflect unreliability of fall responses or pure forgetfulness on the part of the children. The frequencies in the (-+) cell are only 4 or 5 greater than those in cell (+-). The responses to these items may reflect guesswork on the part of the children. 39% of the children knew which geometric shape looked most like a tent and 30% knew that a bicycle was slower than a car, both in the fall and in the spring.

There were 8 items on which at least 15% of the sample passed in the fall and failed in the spring:

		Cell B
23.	which of these groups has less?	28%
18.	which is slower, car or bike?	23%
31.	color the triangle	23%
25.	point to one most like a tent	19%
22.	point to the second one	18%
21.	point to the last one	16%
14.	how many hands do you have	15%
29.	color the square	15%

Five items were especially difficult--two-thirds or more answered these items wrong both in the fall and in the spring:

10. where find a lion
13. way ferris wheel goes
17. how many toes
7. 2 behind middle
24. which has more (when the same)

Changes by individuals. Aside from assessing overall change in the score distribution from fall to spring, as was done earlier, it is possible to assess each individual in the sample for significant growth. Three methods, each using a different criterion for significance of change in the individua have been used.

The first method relies upon the standard error of measurement of the difference scores. This standard error is

calculated from knowledge of the reliability of the difference scores and their variability. The smaller the reliability of the difference scores, the larger the corresponding standard error. Any individual whose difference score was greater than 1.96 standard errors of measurement of the difference scores can be regarded as a significant "change". Whether this change is in the direction of positive growth or in the direction of loss is determined by the sign of the difference score.

The second method of identifying significant changers was by use of the chi square for correlated proportions. The fall item responses for an individual were compared with his spring item responses. The chi square tests the null hypothesis that the proportion of items on which the subject went from the incorrect response in the fall to the correct response in the spring ("gain") is the same as the proportion of items on which the subject went from correct in the fall to incorrect in the spring ("loss"). If the calculated chi square for an individual is 3.84 or greater ($p \leq .05$), the individual is considered to be a significant changer. The direction of the change is determined by the greater of the two proportions in the comparison, "gain" or "loss."

The third method of identifying individuals who changed involved the use of a net percent change score and its corresponding test of significance. The net percent change is the difference between the percent of items on which the individual went from incorrect in the fall to correct in the spring (gain) and the percent of items on which the individual went from correct in the fall to incorrect in the spring (loss). For a further explication of these three measures of change for an individual together with a discussion of additional methods of measuring change, see Hockman (1971).

The number of children showing significant change on the PSI, using three different criteria of change was as follows:

Change Measure	Loss	No Change	Gain
Difference Scores	0	74	10
Chi Square	0	68	16
Net Percent Change	11	52	21

The difference score gave the most conservative estimate of significant change, with only 10 children obtaining a difference score greater than 1.96 standard errors of the difference scores (a difference of 9 points or more). The chi square for correlated proportions identified 16 children as having significantly increased, while the net percent change identified 21 children as showing significant growth. The net percent change also identified 11 children as showing significant loss on the PSI. The less than perfect test-retest correlation indicates that growth was not always uniform from child to child. The net percent change was sensitive to these inconsistencies in growth rate.

Summary

The item analyses from the spring administration of the PSI indicate that this test continues to demonstrate good reliability and the items show definite increases in percent passing as age increases. The instrument also detected growth from fall to spring, both in terms of mean test scores and in terms of individual change measures. The analysis of change in item responses indicated that about half of the items showed a significant increase from fall to spring.

Denver Developmental Screening Test

Spring 1973 Item Analysis

The DDST was designed to aid in the early discovery of developmental problems in four areas: Language, Fine Motor, Gross Motor, and Personal-Social. It is primarily intended to be used as a diagnostic screening procedure with individual children to identify those who are developmentally abnormal. The test was not designed to yield scale scores or a total score, but for the purposes of the Home Start evaluation, scale scores were obtained by adding together items within each of the four separate areas of functioning. The test remained basically unchanged from the fall testing, although there were several minor changes in item composition and scoring procedures that make direct fall-spring comparisons difficult.

Response Distributions. In the fall there were an average of 2.8 refusals per item for the Gross Motor, Fine Motor and Language scales. The mean number of "no response" was 5.5. Refusals were more likely to occur on Gross Motor items and the "no response" category was invoked most often for Language items. The response distributions from the spring data are presented in Table III-7. The "refusal" and "no response" categories had been percentages of 1.7% and 4.5%, respectively. Again, the bulk of the "no responses" occurred on Language items.

The percent of the sample passing the Fine Motor items increased from fall to spring on six of the 10 items. The median percentage for these items went from 67.0% in the fall to 74.5% in the spring. On the Language scale, there were four items on which the percent passing increased from fall to spring. The percent passing "uses plurals" decreased, but the criterion for passing was more rigorous in the spring. The median percent passing for the scale decreased from 55.5% in the fall to 53% in the spring, but the addition of the "defines words" items (which only 8% passed) in the spring largely accounts for that decline. On the Gross Motor items the percent passing increased from fall to spring on seven of the nine items. There was also a slight increase in percent passing Personal-Social items, but the percent passing was already high.

Percent Passing. An examination of the percent passing by age group gives a picture of the developmental nature of the items. These data for the spring are presented in Table III-8. For the most part, items show increasing percent passing with increasing age. The notable exceptions are the raisin items

and picking the longer line (Fine Motor); comprehends hungry, cold, tired, comprehends prepositions, recognizes colors, and defines words (Language); separates from mother easily, washes and dries hands, puts on clothing, and dresses with supervision (Personal-Social); and balance on one foot (1 sec.), broad jump, heal-to-toe walk, and backward walk (Gross Motor). It should be noted that the small Ns for the 3 and 6 1/2-year-old categories may account for some of the inconsistent patterns of percent passing by age.

Correlations. Table III-9 shows the intercorrelations of 29 DDST items. To avoid the problem of non-independent items for intercorrelations and factor analyses, certain items were omitted or re-scored. Only one "raisin" item and one "draw a boy or girl" item were used, and a single "balance" item (item 16) was created by assigning children a score according to the number of seconds balanced. The item-subtotal correlations for each scale are corrected for overlap.

On the Fine Motor scale, the raisin item was the only one with an item-subtotal correlation below .20. Four of the Fine Motor items correlate higher with the Language scale subtotal than with the Fine Motor subtotal. Except for a couple of exceptions, however, the Language items correlate higher with their subtotal than with other scale subtotals. The Gross Motor scale showed similar internal consistency. The Personal-Social items show, on the average, the lowest correlations with the test total. The correlations of these items with their own subtotal are generally low also.

Factor analyses. The factor analysis of the spring item responses resulted in the extraction of 10 factors that accounted for 61% of the total variance. In the fall, 11 factors had been extracted that accounted for 64.6% of the total variance. As in the fall, it was expected that four factors would emerge, each corresponding to a subscale of the test. As in the fall, this expectation was not met. The loadings of all items on all factors are presented in Table III-10. A summary of the items by highest loading on each factor is presented in Table III-11.

Both Fine Motor items and Language items loaded highest on Factor I, which accounted for 12.7% of the total variance. Factor II was predominantly a Gross Motor factor and accounted for 7.6% of the total variance. The remaining factors have as items with highest loadings items from a mixture of subscales.

The disappointing factor structure (as well as the less than perfect relationship between percents passing each item by age) is not very surprising when one looks at the total group percents passing each item. These percentages are usually either very high or very low. Extreme percentageslower the possible range of correlations between items. Lowered correlations, of course, can adversely affect the extraction of clear and meaningful factors.

Reliability. Alpha coefficient reliabilities were calculated for each scale. The results of these calculations (and the comparative alphas from the fall data) are as follows:

	Spring Alpha	Fall Alpha
Fine Motor	.68	.73
Language	.74	.70
Gross Motor	.71	.70
Personal-Social	.42	.61

In general the spring reliability is comparable to the fall's, in spite of instrument modifications. The considerable drop for the Personal-Social scale reliability may be due to the fact that the percent passing these items was extremely high.

Whole score descriptive data. The mean scale scores and the mean total score (by age and by age and sex) are presented in the descriptive data tables (Table III-38 and III-39). The means on the Fine Motor scale are perfectly correlated with age; for the other scales, the means do for the most part increase regularly with age. To obtain another indication of this relationship, scale scores were correlated with age. The correlations increased from fall to spring for the Fine Motor and Language scales, remained the same for the Personal-Social scale, and decreased for the Gross Motor scale. The correlation coefficients can be found in the intercorrelation matrix for whole scores in Chapter V.

When looking at the mean scale scores for the various ages also grouped by sex, the same age-related trends can be seen. The rank order of mean scores with age is better for the females than for the males on the Fine Motor scale but the rank order of means with age is better for the males than for the females on the Gross Motor scale. On the Language scale, the relationship with age is about the same for the two sexes. The Personal-Social scale shows little consistent relationship with age; all ages but the 3-year-old children scored high, on the average, on the Personal-Social scale.

Fall-Spring Change Analyses

Sample size. Ninety-seven of the 100 children who were included in both the fall and spring testing responded to eight or more Fine Motor items both in the spring and in the fall. For the Language scale, 84 children answered all items at each administration. Ninety answered all items, spring and fall, on the Gross Motor scale, and ninety-three parents responded to all items on the Personal-Social scale both in the fall and spring.

Reliability. For the Fine Motor and the Language scales the fall and spring internal consistency reliabilities, determined from the fall-spring sample, are extremely close. For the Fine Motor scale, the fall reliability was .72 and the spring reliability was .68. For the Language scale, the fall reliability was .69 and the spring reliability was .71.

The spring reliabilities for the Gross Motor and Personal-Social scales were considerably lower than for the fall scores. For the Gross Motor scale, the fall reliability was .66, and the spring reliability was .55. For the Personal-Social scale, the fall reliability was .64, and the spring reliability was .44.

The test-retest correlations on the Fine Motor scale and the Language scale were high; .68 and .73, respectively. The Gross Motor scale and the Personal-Social scale showed much less stability over time with test-retest correlations of .41 and .52, respectively.

In no instance was the reliability of the difference score high. The highest reliability for a difference score occurred for the Gross Motor scale (.36). The other three difference score reliabilities were approximately zero.

Average growth from fall to spring. The spring means for the Language scale, the Gross Motor scale, and the Personal-Social scale were significantly higher than the fall means:

	Fine Motor (N=97)		Gross Motor (N=90)		Language (N=84)		Personal-Social (N=93)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Fall	5.44	2.23	4.69	1.82	3.05	1.69	5.63	1.49
Spring	5.62	1.92	5.18	1.51	3.67	1.78	6.03	1.12
Difference	.18	1.69	.49	1.83	.62	1.28	.40	1.31
t	1.01		2.52		4.40		2.91	
p	n.s.		<.05		<.05		<.05	

Stability and change in item responses. The cross-tabulations of the fall and spring item responses are presented in Table III-12. Of the ten items on the Fine Motor scale, two showed significant decreases in percentages passing from fall to spring. These were the two items dealing with dumping the raisin out of the bottle. Four of the items showed significant increases in percent passing from fall to spring. No significant growth was observed on the two draw a boy or girl items, on the tower building item, nor on copying a circle. The tower building item was extremely easy, both in the fall and the spring. The copying a circle item was also relatively easy both in the fall and in the spring. The second draw a man item where six parts were to be included was extremely difficult both in the fall and in the spring. Had the two raisin items not been included in the test-retest analyses, a significant gain on the Fine Motor scale would probably have been observed.

The plurals item on the Language scale showed a significant decrease between fall and spring, but all other items except prepositions showed a significant increase. The direction of change on the preposition item was also toward an increase.

The general trend in the Gross Motor scale was toward an increase. The amount of increase was significant on two items: Hopping and catching a ball. Two items showed decreases, one of which (backward walk) was significant even though the magnitude of the decrease (9%) was not very large.

There was no significant change on any item in the Personal-Social scale, although the predominant direction of change was toward an increase.

Changes by individuals. With extremely low difference score reliabilities and the resulting large standard errors of measurement, and ten or fewer items on each scale, resulting

in unstable chi squares and net percent gain, an analysis of changes by individual was not undertaken at this time. It may be possible to do this in the future by regarding all items as belonging to one scale.

Summary

Item analyses on the DDST indicate a number of items that do not show the developmental trend that would be desirable in an instrument assessing change in children. In revising the DDST for the fall 1973 evaluation, three items will be deleted in an attempt to make the instrument more sensitive to age changes and more stable. The items to be deleted are the raisin item from the Fine Motor scale, "defines words" from the Language section, and "washes and dries hands" from the Personal-Social scale. Only three of the scales have adequate internal consistency reliability and test-retest reliability. On the other hand, the factor analysis and scale item analyses suggest that the distinction among the four scales is not perfectly clear. There is overlap in factor content as well as in item-total correlations.

Concept Development Test (CDT)

In the fall 1972 pretesting of the Home Start evaluation test battery the ETS Enumeration Test was administered to assess the mathematical concepts of matching, ordering, and counting. The analyses of the fall data indicated that two of the test's four scales were unusable (in terms of such psychometric properties as factor loadings, alpha coefficients, percent passing by age, and item-subscore correlations) and that the remaining two scales measured only a very narrow range of numerical skills. On the basis of these analyses, the test was dropped from the battery. It still seemed important to assess children's growth in some of the cognitive areas such as the Piagetian concepts of conservation, seriation, and classification. High/Scope staff, therefore, set out to locate Piagetian measures that could be used for the Spring 1973 pilot evaluation.

It soon became apparent that many of the procedures for assessing such concepts as conservation were too complicated to be used on such a large scale as required for the national evaluation. Thus, an important consideration in the selection of a test procedure was the suitability of materials for transporting to and testing in homes. In spite of potential problems with materials, it was decided that real objects were highly desirable and that such techniques as matrices for assessing classifications would not be used. A second consideration which placed limits on the test development effort was the need for a test straightforward enough so that time required for training community interviewers would not add additional burdens to the training week schedule. This meant that a flexible Piagetian "clinical interview" procedure would not be possible. Instead, the presentation of stimulus materials to the child had to be standardized and tester responses to children had to be basically invariant, i.e., there was little leeway to allow for the many contingencies often necessitated by the idiosyncratic responses children give. Finally, and most importantly, the age level of the Home Start children limited the concepts to ones that one could reasonably expect to assess in preoperational children.

Several sources provided useful information in the search for items for the Concept Development Test: Banet and Rugg (1971), Goldschmid and Bentler (1968), Kamii (1971), Lavatelli (1972), Rugg (1970, 1971 a,b), Sigal and Olmstead (1967-1968) and Secrist, Forman and Norris (no date). The set of items that met the above criteria were selected to assess four basic concepts:

- One-to-one matching. This is one of the most basic of number concepts. The ability to produce correspondence between two sets of objects is considered a precursor of number conservation and is important in the development of other number concepts, such as seriation. The correspondence

item in this test is "unprovoked" in that a natural match (as between a cup and saucer) was not used.

- Number conservation. The logical knowledge that the number of objects does not change with changes in the perceptual configuration is an important step in the development of logical thinking. Children below the age of five may demonstrate the ability to match one-to-one, yet rely on space occupied as the basis for judging numerical equivalence.

- Seriation. This is the most advanced concept on the test, but the task of placing three, four, five or seven dolls in order of size can be solved at different levels. Kamii (1971) suggests that preschoolers should be capable of "perceptual seriation", i.e., making the correct response through trial and error. Operational seriation occurs at a later age when the child understands the logical relationships and does not have to depend upon the perceptual configuration of the series of objects. The score form provided space for the testers to indicate whether the child seriated by trial and error or not.

- Classification. This concept ultimately leads to the concept of class inclusion (at about age seven). At the preschool level the child will progress from being able to select and apply one classification criterion (e.g.,color), to being able to shift to a second criterion (e.g., size), to finally being able to justify his classifications. These three aspects of classification are assessed in Part 4 of the Concept Development Test.

Since the Concept Development Test was used for the first time in the spring data collection, no fall-spring comparisons are possible. All findings and subsequent recommended changes in the test format are based on the spring data. As evidence bearing on the test format is discussed, the changes made for fall 1973 testing will be presented.

Spring 1973 Item Analyses

Response distributions. The distribution of responses to the CDT items is presented in two tables. Table III-13 shows the responses obtained when children were asked to perform some operation or judgment (one-to-one matching, number conservation, seriation, and classification). A subset of these items (indicated by a footnote) comprises the "scale" on which subsequent analyses were performed (these analyses are discussed below). Table III-14 contains the response distributions for the items that required children to explain their operation or judgment. The response

categories were adapted from those employed by Rothenberg (1969); the definitions are given in Tables III-15 through 17.

The data in Table III-13 indicate several interesting features of the CDT. The responses to item 3 were coded to show how nonconservers (88% of the children) judged the number of checkers when one row of six was collapsed. The red (collapsed) row of checkers was judged "more" by 39% of the nonconservers; the longer row of black checkers was selected by 69%. The greater number choosing the longer row is to be expected, but since the differing colors may be a confounding factor, the procedure will be revised so that all checkers will be of the same color. It was noted earlier that children can solve the seriated problem by trial and error and the proportion seriating three dolls without trial and error increased with age (not shown in table).

One general pattern seen in the children's explanations is the high proportion of nonexplanatory responses (e.g., "limited-verbal", "perceptual", and "don't know"). Between 55 and 65 percent of the explanations for conservation and seriation were of this type. The other notable finding is that for most of the items, there are no clear relationships between type of explanation and age (see discussion which follows on percent passing). Although there may be disagreement as to what constitutes a "correct" conservation explanation, all symbolic, number and matching explanations were considered to be "adequate" (see Rothenberg, 1969). It is clear that correct seriation explanations did not occur very often (3.9% for the entire sample when seriating three dolls) and adequate conservation explanations were given by 12.4% of the children when checkers were in matched rows and 9.4% when one row was collapsed. Brainerd (1973) has recently presented a strong case for accepting the child's judgments or manipulations as indicative of the presence of the cognitive structure rather than the verbal explanations that may follow or accompany his actions. The present findings are consistent with Brainerd's contention that the children who can provide adequate verbal rationales are only a subset of the children who possess the cognitive structure being assessed.

Percent passing. The percent of children in each six-month age group passing the 10 "scale" items is presented in Table III-18. (For comparative purposes all four seriation items are included even though the second, third and fourth ones were not administered to very many children.) The difficulty for these 10 items ranged from 7.1% of all children passing item 3 (conservation judgment with collapsed row of checkers) to 79.9% of all children passing item 5 (first classification). Most of the items do show an increase in percent passing with increasing age. The clear exceptions are items 3 (conservation-collapsed row) and 6 (classification-regrouping). These items are very difficult and the difficulty does not change with age.

Although it is often less clear what constitutes a "correct" verbal explanation for the children's responses, three of the conservation explanations were considered as "adequate", following Rothenberg's (1969) procedure. For seriation and classification, there is more clearly one adequate explanation. The percent of children giving adequate explanations for their conservation, seriation and classification responses is presented in Table III-19. The percent correct for the two explanations of the first classification items shows the most dramatic increase with age. The seriation explanations, on the other hand, show virtually no improvement with age. There may be a problem with the manner in which the seriation item is administered. The tester asks the child to put the dolls in order from the biggest to the smallest; after the child responds the tester asks: "Why did you set the dolls up this way". Seriation is a difficult concept for these age groups so it is not surprising that the most common explanation is "because", "because you told me to", or other "limited verbal" responses. Some 37% of the children give no explanation at all, i.e., they either refused, said "I don't know" or gave no response. (See Table III-14).

The seriation explanations do not seem to yield useful information about children's conceptual development. The explanations for the conservation items on the other hand, show a general increase with age, although the overall percent correct is still low. The figures for the age groups in Table III-19, however indicate that the difference between the matched rows and collapsed row conditions for judging conservation occurs primarily in the five-to-six-year age groups.

Correlations. The 10 items that might possibly constitute the best "scale" for measuring these Piagetian concepts were considered as a set for subsequent analyses. In these analyses only the first seriative item (3 dolls) was included due to extremely small Ns for the other seriative items. The intercorrelation matrix for the set of 10 items is presented in Table III-20. Two items have particularly low item-total correlations (conservation-collapsed checkers and classification-regrouping); these items were also among the most difficult for the test sample. In general the intercorrelations and the item-total correlations are low. Except for intercorrelations among the classification items, the median r is .10 and none exceeds .24.

Factor analysis. The 10 items were entered into a principal components factor analysis with varimax rotation to investigate further the interrelationships among items. The factor loadings for each item are listed in Table III-21 and the items loading on each factor are described in Table III-22. Five factors were extracted accounting for 70.6% of the total variance. In general the items factored according to the concepts the test was intended to measure. There are three items

(conservation-matched rows, one-to-one matching, and classification-first grouping) which have loadings greater than .30 on two factors. Items 7 through 10 which ask the child to identify blocks according to two intersecting attributes (color and size), split into two factors, one for large blocks and one for the small. Aside from these items, there is clearly a conservation factor (Factor II, 11.4% of the variance), a classification factor (Factor III, 12.2% of the variance), and a "manipulation" factor (Factor IV) in which the items required a manipulation of objects (seriation and one-to-one matching loaded highest).

When four factors were specified in a subsequent factor analysis on these items, 60.1% of the variance was accounted for and items 7 through 10 tended to move onto one factor, but there were also a number of items whose loadings were shared among two or more factors.

Because there were a diminishing number of children passing seriation items as more dolls were added, only one item (the seriation of three dolls) was included in these analyses. An alternative method of scoring was investigated by assigning scores according to the number of seriation items a child passed (i.e., the number of dolls he could seriate). The seriation items were re-scored in this manner and substituted for item 6 before intercorrelations with other items were calculated. The correlations of the new seriation item tended to be lower with the classification and pointing items and higher with the other items. Factor analysis of the set of items, including the re-scored seriation, yielded five factors accounting for 72.2% of the variance. The seriation item loaded on a factor with the conservation items instead of with one-to-one matching as it did when scored in the original manner. This method of scoring seriation responses did not seem to yield the same conceptual distinction between conservation and seriation as found previously. Thus, in subsequent analyses of the CDT "scale" the three-dolls item was scored pass-fail.

The next step in search of a cleaner factor structure was to delete item 6 (classification-regrouping) because of its low item-total correlation. A principal components analysis with varimax rotation of the resulting 9-item scale extracted four roots accounting for 64.9% of the variance. The results of this analysis are shown in Table III-23 and the items loading on each factor are listed in Table III-24. One-to-one matching, seriation and classification loaded together on Factor II, accounting for 14.5% of the variance. Factor IV had the two conservation items loading highest and accounted for 12.6% of the variance. As in previous factor analyses, the pointing items split into two factors according to size. On the basis of the above analyses, the 9-item CDT "scale" was used in the analyses of the whole scores and in the intercorrelations with other measures.

Reliability. The 9-item CDT was found to possess good internal consistency (alpha = .64, N = 185), up slightly from the .61 reliability of the 10-item "scale".

Whole score descriptive data. The total score on the CDT is clearly age related. The mean score progresses regularly from 3.5 at age 3 to 6.8 at age 6 1/2 (see Table III-38). The overall mean for 182 children is 5.0. There is a tendency for boys to score higher up to about age 5; after that the mean score for girls is equal to or above that of the boys (see Table III-39). The CDT total score correlates only .39 with age.

Summary

Since there was no fall testing with the CDT, fall-spring change analyses were not possible. In terms of a single administration of the CDT it appears to be a reliable scale (as it was scored for these analyses) containing distinct factors that correspond to the Piagetian concepts the test was designed to tap. The item intercorrelations are low yet the good reliability and factor structure suggest that this is a scale that is potentially useful. Even though the mean scores increase with age, the CDT has a low correlation with age for a scale that presumably measures age-related concepts. This may partly be attributable to the "noise" due to errors of measurement that is bound to be present in the first trial of an assessment procedure. Several revisions will be made in the CDT before the fall 1973 data collection that will hopefully improve the precision of the measure.

One change is to modify the first three items so that they form a more unified procedure and create a more logical sequence for the child. The first item will be simplified by requiring the child to match six checkers instead of 12 (in addition to making it easier for the tester to manipulate the materials, the percent passing should increase with fewer checkers to match). The sequence of the first three items would then be as follows: The child is first asked to demonstrate one-to-one correspondence by matching up six of his 12 checkers with the tester's six checkers; next he makes a judgment ("which has more?") which can then be logically based on his actions. The third step will have the tester performing a transformation on the objects in view of the child (an important ingredient in many conservation tasks) and then asking the child to judge whether the two rows still have the same number. With this sequence, if the child is in fact a "conserver", the logical operations on which to base a conservation judgment are present. In addition to these changes, the seriation items will be reduced to two (with three and four dolls). This will also simplify the testing procedure.

Before the fall data are ready to be analyzed, alternative scoring procedures will be explored. Some means of combining the explanation with the judgments may further improve the scale.

Child Food Intake Questionnaire

In order to examine the quantity and nutritional quality of the diets of Home Start children, a method of 24-hour recall was utilized for the spring Child Food Intake Questionnaire. According to the fall procedure, the community interviewer read a list of 41 foods to the mother, who indicated whether the focal child had eaten them on the previous day and, if so, whether they had been eaten more than once. This procedure did not provide information on the quantities or the various foods eaten. The spring format was designed to guide the mother's memory through meals and snacks of the previous day, without suggesting names of foods her child "should" have eaten. More specifically, the mother was asked what the focal child ate the previous day for breakfast, lunch and dinner, and any snacks in between. The interviewer probed for exact quantities of all foods. To help the mother estimate quantities of food more accurately and to help the tester reliably record the mother's responses, the tester used, plastic, child-size beef patties (2 ounces), glasses (4 ounces and 8 ounces) and bowls (10) ounces) marked at one-fourth cup intervals, and tablespoons. The testers were instructed not to suggest "appropriate" amounts of food; rather, the mother was asked to point to markings on the glasses and bowls that indicated how much of a certain food the child had eaten. The tester mentioned particular foods at her own instigation only when probing for possible additions which might have been forgotten (such as milk on dry cereal or lettuce on sandwiches).

Scoring procedures for the Food Intake. Data processors coded the Food Intake on the bases of overall quantitative intake and of specific nutritional intake. Seven food groups were used to categorize foods (milk, meat, eggs, Vitamin A rich vegetables, Vitamin C rich fruits and vegetables, other fruits and vegetables, and breads and cereals). Data processors scored overall food intake by computing the number of servings to get a total "food score". Figure III-1 indicates equivalents, established after consultation with experts in the field of nutrition, which were used to code foods in each of the seven groups. "Nutrition scores" were defined for each food group by specifying the maximum number of servings for each food group which could count toward a total "nutrition score". The perfect nutrition total (12.5 servings) was based upon the recommended daily allowance (RDA) of proteins, vitamins and minerals for three- to six-year-old children. When computing nutrition scores for individual groups, substitutions from one group to another were permitted for two categories: (1) if a child had more than the RDA of milk, the

excess could, if needed, be added to the meat score; and (2) if there were excessive servings of Vitamin A rich vegetables or of citrus fruits, the excess could be added to "other fruits and vegetables". It was decided not to code foods of little nutritional content, such as potato chips, doughnuts, mayonnaise and the like, since analysis of caloric intake was not being conducted.

Response distributions. Examination of descriptive data indicates that a typical Home Start child's diet consists of 35% bread, 25% fruits, 24% meat and 5% eggs. Means and standard deviations for the number of servings in each food and nutrition group are presented in Table III-25. The proportion of intake in each group was also calculated. Means and standard deviations for these proportions are presented in Table III-25.

Another way of describing the food intake of Home Start children is to examine their nutritional intake in relation to the maximum or "ideal" amounts recommended for each group. The ideal amounts for each group, the mean and SD of the quantity consumed by the Home Start children, and the percent that the mean is of the ideal are presented below:

	Nutritional Intake			
		Home Start (n=170)		
Food Group	Ideal Score	Mean	SD	% of Ideal
Milk	2.50	1.44	.90	57.6
Meat	1.40	1.31	.25	93.6
Eggs	.60	.25	.29	41.6
Vitamin A vegetables	.60	.08	.20	13.3
Citrus fruits	1.00	.32	.45	32.0
Other fruits & vegetables	2.40	1.66	.94	69.2
Breads & cereals	4.00	3.45	.90	86.3
Total	12.5	8.51	1.93	68.1

As can be seen, Home Start children, on the average, do not score 100% in any of the seven food groups. The closest they come is 93.6% in the meat category (significant in that this group, which includes peanut butter and nuts, provides the main source of protein) and 86.3% in the breads and cereals group. When Vitamin A rich vegetables, citrus fruits and vegetables are combined, as in the four basic food groups, the amount eaten is 51.5% of an adequate serving. When meat and eggs are grouped together (as in the four basic groups), children obtain 78.0% of the recommended daily intake.

Whole score descriptive data. Total food scores and total nutrition scores were described by age and by age and sex, and means, standard deviations and standard errors are presented in Tables III-38 and III-39. There does not appear to be any clear relationship between either food or nutrition intake and age or sex.

Summary. It appears from these data that Home Start children do not obtain recommended daily allowances of protein, vitamins and minerals. It should be noted, however, that problems of reliability inevitably arise when one counts on the memory of mothers, their ability to judge quantities, data collection by paraprofessionals untrained in nutrition, and data processing that attempted to judge the amount of tomato, meat, noodles, and cheese in one-half of a cup of spaghetti. Moreover, it was not possible to measure the quality of food listed on score forms; for example, the amount of fat in ground beef affects its protein content and varies widely from store to store, yet a three-ounce hamburger from West Virginia was scored the same as a three-ounce hamburger from Kansas. It is suggested, then, that these findings be interpreted as an indicator of the nutritional quality of the diet of Home Start children, rather than as an exact measure. It is, however, safe to conclude that Home Start children have diets deficient in some nutritionally important elements, especially fruits and vegetables. The proportion of meats and grains in their diets approaches that of an adequate diet.

Height and Weight

In order to assess the physical growth of Home Start children, height and weight measurements were collected both in the fall and the spring. Means, standard deviations and standard errors are presented by age in Table III-38. Similar data by age and sex can be found in Table III-39. Curves are shown in Figures III-2 and III-3, for girls and boys respectively, with means plotted against norms published by the Department of Pediatrics of the University of Iowa. Home Start girls were found to be of normal height at three and one-half years old only; at all other age levels girls were below the norms at all ages, with five-year-olds coming within one pound of the norm, and six and one-half-year-olds deviating the greatest (by over four pounds). Home Start boys at three and one-half years were approximately one-half an inch above their height norm, while at all other ages boys were typically about .7 of an inch below. Weight of Home Start boys was below the norms at all ages, ranging from .8 pounds below at three years of age, to 2.7 pounds below at age five.

Height and weight for children tested both in fall and spring can be examined to assess fall-spring change. These 100 children typically grew 1.8 inches in height, and gained an average of 2.2 pounds. Increase in height in the norms over a six-month interval averaged 1.2 inches, and increases in weight were usually 2.0 pounds. Correlations were calculated between fall height and spring height, and between fall height and height change, to determine more specific relationships between them. The correlation between fall and spring height was only .83, due possibly to individual differences, such as atypical growth spurts, and to tester measurement error. The correlation between fall height and height change produced a more interpretable figure of -.57, indicating that shorter Home Start children had a tendency to grow faster than the taller ones. The correlation of fall weight with weight change was .13, indicating that fall weight was not related to weight change. The high correlation of .93 between fall weight and spring weight indicates that the heaviest fall children were the heaviest in the spring as well.

In summary, Home Start children were generally somewhat below the norm for both height and weight, but their growth from fall to spring was somewhat greater than normal for these age groups.

Zinc Analysis

Hair samples were collected in the fall from 38 Home Start children for the purpose of analyzing zinc content. Zinc is purported by some researchers to be an indicator of animal protein content in the diet; zinc content, accordingly, may be positively correlated with height, weight, food intake, and performance, to mention a few. After chemical analysis of Home Start hair samples by staff at Detroit Veterans Administration Hospital, correlations were calculated between zinc and sex, food intake (five food groups), age, weight, height, PSI total score, DDST scale scores, and the 8-Block child total score. None of these correlations seemed meaningful because 11 of the 15 correlations were negative. In other words, high zinc content was related to low height, low weight, low PSI scores, and so on. One significant correlation resulted between zinc content and the DDST Fine Motor scale score, but the correlation was -.43, again indicating a relationship between low zinc content and high Fine Motor scores.

Recent research into hair analysis has indicated that zinc is only one of several chemicals which must be analyzed simultaneously to yield meaningful results. Isolated, zinc does not provide sufficient data for necessary analyses. Analysis of the remaining trace-elements with large enough samples of hair is difficult, time-consuming and extremely costly.

It is questionable at this time how the results should be interpreted, both because of the negative correlations mentioned above and because the population norms are not yet firmly established. Suggested base-line estimates for zinc, for example, have been between 88 and 140 ppm for three to six-year-old children, in relation to which the Home Start average of 130 ppm approaches normality. Levels below 70 ppm have been related to poor appetite and growth impairment, and it is possibly a matter of some concern that five of the 38 Home Start children had levels below 80 ppm. One set of Home Start twins had remarkably high zinc levels of 488 and 500 ppm, but the use of zinc-containing shampoo by the family could have resulted in increased observed zinc content.

There are local problems with collection of hair samples from Home Start children. Some mothers strongly objected to testers cutting their child's hair, especially among certain ethnic groups. Some of the children refused to allow testers to cut their hair, even when mothers permitted it.

On the bases of both analysis problems and data collection problems, it is suggested that zinc analysis of Home Start children not be continued in the fall 1973 evaluation. Proper analysis of necessary trace-elements seems to be beyond the scope of this evaluation. Also, it is doubtful whether local programs could ordinarily be expected to effect substantial change. At this point in time, the expense and difficulty of the analysis do not yeild compensatory results.

Schaefer Behavior Inventory (SBI)

The SBI consists of 15 descriptive statements of child behavior that are read to the child's parent. Two typical items are "Stays with a job until he finishes it" and "Watches others, but doesn't join in with them". The mother indicates the degree to which the description fits the child by responding on a scale from 1 to 7. The SBI contains three scales of five items each, labelled Task Orientation, Extraversion-Introversion, and Hostility-Tolerance. The instrument remained unchanged from fall testing.

Spring 1973 Item Analyses

Response distribution. The distribution of ratings is shown in Table III-26. As in the fall, there is a pronounced tendency toward using positive ratings. The effect of this ratings bias will be more clearly seen when the scale means and standard deviations are presented.

Correlations. The intercorrelation matrix is presented in Table III-27. For each scale, all corrected item subtotal correlations were greater than .20. Each item correlated higher with its own scale score than with the other two scales. Since a total test score would not be meaningful for the SBI, no item-total correlations are reported.

Factor analyses. In the fall, a three factor rotation of the principal components solution, accounting for 49.7% of the total variance, resulted in a separation of items according to the three scales-- Task Orientation, Extraversion-Introversion, and Hostility-Tolerance. The first attempt at rotation in the factor analysis, as in the fall, yielded four factors. For the spring data, these four accounted for 54.7% of the total variance. The factor loadings are presented in Table III-28 and the items loading highest on each factor are listed in Table III-29.

Three factors were then rotated, which accounted for 46.9% of the total spring variance. The three scales did not separate as well in the spring as they did in the fall. The first factor represented a combination of Extraversion and Task Orientation items. The second factor was a combination of Hostility and Task Orientation items, and the third factor was saturated with both Hostility items and a Task Orientation item. The item loadings for this second factor analysis can be found in Table III-30. Table III-31 lists the items with high loadings on each factor. The three "traits" corresponding to the scale labels that were found

in the fall factor analysis did not replicate on the analysis of the spring data.

Reliability. The alpha coefficients were calculated for each scale. The internal consistency of the SBI was less in the spring than it had been in the fall:

	Fall Alpha	Spring Alpha
Task Orientation	.72	.61
Extraversion-Introversion	.72	.58
Hostility-Tolerance	.67	.69

Whole score descriptive data. The mean scale scores, standard deviations and standard errors for each age level are presented in Table III-38; they are presented for each age-sex group in Table III-39. The scale scores were calculated by summing the ratings on the five items for each scale. As in the fall, the means were closer to the positive end of each dimension (the low mean for the hostility scale is because a low score reflects "tolerance").

Fall-Spring Change Analyses

Sample size. Very few children were lost to the test-retest sample because of missing item responses. The sample sizes for the Task Orientation Scale, the Extraversion scale, and the Hostility scale were 95, 94, and 93, respectively.

Reliability. As in the total sample analysis, the spring coefficient alpha was lower than the corresponding fall reliability for the Task Orientation and Extraversion scales. On Task Orientation, the reliability dropped from .73 to .66. On the Extraversion scale, the reliability dropped from .67 to .56. The fall and spring reliabilities for the Hostility scale were nearly identical, .71 in the fall and .72 in the spring.

The Task Orientation scale and the Extraversion scale showed only moderate stability from fall to spring. The test-retest correlations were .46 and .38, respectively. The scores on the Hostility scale showed stability from fall to spring with a test-retest correlation of .66. The reliabilities of the difference scores were .45 for Task Orientation, .42 for Extraversion, and .16 for Hostility.

Average growth from fall to spring. The spring means were all higher than the fall means, and the spring mean on Extraversion was significantly higher than the fall mean on Extraversion. Since the Extraversion scale mean was the highest of the three in the fall, the lack of change on the

other scales cannot be attributed to a ceiling effect.

	Task Orientation (N=95)		Extraversion (N=94)		Hostility (N=93)	
	Mean	SD	Mean	SD	Mean	SD
Fall	23.68	5,57	26.72	5.84	18.32	6.25
Spring	24.19	4.75	28.24	4.57	18.57	6.32
Difference	.51	5.41	1.52	5.91	.25	5.21
t	.91		2.48		.46	
p	n.s.		<.05		n.s.	

Stability and change in item response. The cross tabulations of the fall and spring item responses are grouped by scale in Table III-32. The most stable item on the Task Orientation scale was "watches home visitor carefully". This stability is reflected in the mean difference of zero between the fall and spring means on this item and in the test-retest correlation of .43 for this item. The least stable item, on the basis of the test-retest correlation of .05, was the item stating that the child pays attention to what he is doing when other things are going on around him. The mean increase on this item was very slight (.09). The item with the largest increase was "stays with the job until finishes it".

Two of the five items on the Extraversion scale showed a significant increase in mean from fall to spring. These items were "tries to be with others", and "likes to take part in activities with others". This last one also showed relatively high stability with a test-retest correlation of .42. The test-retest correlations for the remaining items were in the low .20's.

All items on the Hostility scale showed considerable stability, with test-retest correlations ranging from .28 to .59 for all items except "slow to forgive when offended", for which the test-retest correlation was only .10.

Summary

In contrast to the results obtained with the fall data, the Schaefer Behavior Inventory was not found to consist of three factors corresponding to the item assignments on the instrument. When the a priori scales were scored, however, there was reasonable internal consistency, although it tended to be lower than in the fall. As an instrument for measuring change, the SBI appears to be only partly successful. In terms of scale scores, only the Extraversion-Introversion scale showed significant fall-spring change.

Pupil Observation Checklist (POCL)

Upon completion of testing and interviewing, each community interviewer was asked to rate the Home Start child on a checklist consisting of eleven bipolar adjectives such as "resistive-cooperative" or "quiet-talkative". The checklist has two scales, Test Orientation items pertaining to the child's behavior during the testing situation, and Sociability items pertaining to the child's general overall behavior as seen by the testers. The 11-item POCL was reduced to the nine-item scale used in the spring when the two items that did not load high on either factor were deleted.

Spring 1973 Item Analyses

Response distributions. As in the fall, the testers tended to use the positive ends of the bipolar items with a disproportionately high frequency. The effect of this positive response bias is evident in the high means for the two scales. The spring item response distributions are given in Table III-33.

Correlations. Table III-34 shows the intercorrelations of the POCL items and the item-scale correlations. All inter-item correlations are high and all correlations of items with their subtotal are greater than .80 (corrected for overlap).

Factor analysis. The factor analysis of the nine POCL items duplicated the two factors found in the fall. In the spring, these two factors accounted for 80.7% of the total variance. The first factor, Test Orientation, accounted for 43% of the total variance and had, as items with highest loadings, the five items scored together as a Test Orientation scale in the fall. The second factor accounted for 38% of the total variance and included the remaining four items scored together for a Sociability scale. The factor loadings for each item and a summary of the items loading highest on each factor are found in Tables III-35 and III-36.

Reliability. In the spring, both scales had internal consistency reliabilities higher than those obtained in the fall:

	Fall Alpha	Spring Alpha
Test Orientation	.92	.95
Sociability	.88	.94

The improved internal consistency of the scales may be due, in part, to the shortening of the scales after last fall's testing.

Whole score descriptive data. The mean scale scores (by age and by age and sex) are presented in the descriptive data tables (Table III-38 and Table III-39). For each scale there is a slight, but not pronounced, tendency for mean scores to increase with age.

Fall-Spring Change Analyses

Sample size. Complete item responses, both in the fall and in the spring, were available for 90 children on the Test Orientation scale and for 92 children on the Sociability scale.

Reliability. The coefficient alphas for both scales at both testing times were high, ranging from .89 to .92. Each scale had, as its test-retest correlation, .51, indicative of moderate stability over time. The high internal consistency reliabilities, coupled with the moderate test-retest correlations yielded extremely high reliabilities of the difference scores. For Test Orientation, the reliability of the difference scores was .82. For sociability, the reliability of the difference scores was .80.

At this point, it is difficult to state whether these reliabilities reflect genuine differences among the children, or differences in perception of these children by the raters. The spring ratings were not made by the same testers who rated the children in the fall.

Average growth from fall to spring. The mean scale scores obtained for the sample of children rated both in the fall and spring are presented below. There were no significant fall-spring changes.

	Test Orientation (N=90)		Sociability (N=92)	
	Mean	SD	Mean	SD
Fall	25.84	7.07	18.60	6.50
Spring	25.69	7.02	19.03	6.80
Difference	-.16	6.96	.43	6.61
t	-.21		.63	
p	n.s.		n.s.	

Stability and change in item responses. The mean item ratings for the fall and spring and the mean differences are presented in Table III-37. There were no significant changes in mean item scores from fall to spring (the largest change, however was for the Quiet-Talkative item). Four of the items showed a decrease in mean score. There was moderate agreement between the fall and spring testers, as seen by the correlations which ranged from .31 to .53.

Summary

The POCL contains two distinct and homogeneous factors which are highly reliable. Change is difficult to interpret when differences are confounded with a change in testers. Thus, it's not clear whether the lack of significant change is attributable to the fact that children did not change in these behaviors or that they changed but the perceptions of the new raters did not reflect the change. The already high ratings found on each scale in the fall may partly account for the apparent lack of change in Test Orientation or Sociability.

IV

ANALYSES OF PARENT MEASURES

The internal characteristics of the High/Scope Home Environment Scale, the Parent Interview, and the 8-Block Task are examined in this chapter. Analyses for the High/Scope Home Environment Scale and the 8-Block Task are much the same as those conducted for the child measures:

- Response distributions across item categories;
- Intercorrelations among items;
- Factor structure among items.

There is a major difference, however, besides the fact that these measures are more intimately involved with parents than the others: the constructs that these two measures seek to define are far more diffuse and unspecified than those that are the focus of the child measures. There is an exploratory process characterizing the development of these measures that is simply not present for the child measures--even including the Concept Development Test which was administered for the first time in the spring 1973 data collection. In part this is due to the relative paucity of field research applications of home environment and mother-child interaction measures, compared to the widespread field applications of child measures. Thus, less work was done by others before this project, and more was left to do as a preliminary task of the evaluation effort.

In addition to the search for measures, there is a real sense of exploration because no one really knows what to look for. Intuitively it seems apparent that many aspects of the mother-child relationship and the home environment must have a profound influence on the child's psychological and physical growth. Moreover, many people feel they know what it is in the mother-child relationship and in the home environment that most influences the child. Yet, there does not exist a cumulative body of research that agrees on the most important aspects. Most of the influencing

conditions considered important are so complex that the measurement technology falls far short of even putting the hypotheses to a fair test.

Thus the development of the High/Scope Home Environment Scale and the 8-Block Task must depend, to a certain extent, on serendipity. A workable number of home and mother characteristics are selected for inclusion in the measures, based on some sort of consensus of expert opinion about what is most important to examine; then the data obtained from the measures are examined and cross-examined for hints about the direction to follow next. The next sections are party to this process, as the standard psychometric analysis tools are applied to this new set of scores from Home Start families.

The problems faced for the High/Scope Home Environment Scale are different from those for the 8-Block Task. For the former, the main problem is developing items that can obtain relevant information to analyze; for the latter, the problem is one of developing analytic methods for extracting useful information from the complex interaction sequences recorded in the data files.

The Parent Interview is another matter entirely. It does not seek to define psychological constructs or complex environmental conditions; rather, it simply gathers some basic family information into a conveniently usable format. Its item response distributions tell little about the measure, but speak directly about the Home Start families.

Each of these three measures is examined in a separate section below.

High/Scope Home Environment Scale (H/S HES)

The H/S HES is a 47 item parent questionnaire that was included to obtain information on the child's home environment. Many existing home environment scales were reviewed when preparing the 39 item version used in the fall 1972 data collection, in order to help conceptualize the scales that the ideal version would have, and to build a varied enough item pool so that particular kinds of items would not be overlooked. Three types of items were used in the fall version: a large number of three-response items that attempted to record the frequency of home events thought to possibly influence child growth; four checklists, each comprised of ten or so objects, events, or conditions that were checked "yes" if present and "no" if not; and six observation items that were checked by the community interviewer after she left the home according to how frequently she observed certain mother behaviors.

The results of the fall analyses of the H/S HES were, in a word, disappointing. The six or so a priori scales were nowhere to be seen, with one possible exception, and of the four subscales empirically formed by means of a second-order principal components factor analysis only two were reliable enough to be used in further analyses. These two scales loaded with the H/S HES checklist totals and observation totals in the whole score factor analysis, suggesting a strong "methods" factor rather than any substantively interesting relationships.

Out of this set of circumstances plans for the revised version began to take shape. It was apparent that a usable version could not be devised merely by revising or culling poor items, as hoped, so the basic purpose of the measure was once again reviewed. A set of ten or so broad home conditions thought to be necessary for normal child development were identified. These conditions included such things as a warm and personal relationship with the mother; ample opportunity to make decisions; security through a stable, predictable, daily routine and personal possessions; opportunities to explore and create things, or, phrased negatively, freedom from excessive restrictions; supportive rather than punitive discipline; and ample cognitive stimulation through the objects surrounding the child, through the special activities and events he experiences, and through the content of daily child-adult interactions. A set of items was assembled for each of these broad areas, and enough items were included to allow many of the

poorer items to be discarded while still retaining enough to build a moderately reliable scale. Where items could be salvaged from the first version an attempt was made to do so, but many new items were written. Items were written to minimize the level of inference needed for interpretation, but none of the a priori home environment constructs proved very simple to quantify unambiguously, so most items tapped the constructs in a very roundabout way.

The revised version used in the spring data collection had increased to 47 items, of the same three kinds as the first version. If items on the four checklists were counted individually, the total number of items would be 113, a very large number for just one of the measures in a broad battery intended to be used in a wide-scale field evaluation. The plan was to drastically reduce the number of items for fall 1972 based on the spring results. Spring was the last opportunity to get the necessary data before beginning the formal evaluation in fall 1973, so if a promising item was to be tested, it had to be tested in the spring H/S HES version.

Spring 1973 Item Analyses

Response distributions. The first criterion for screening bad items was the response distribution. If most responses fell in just one of the two or three categories, the possible correlations with other items and scores would be artificially restricted, and also, possible growth over time would be artificially restricted. The response distributions for each item are presented in Table IV-1.

Inspection of some of the revised categories salvaged from fall items shows that most of the revisions succeeded in evening out the response distributions. For example, compare the "number of children's books" item responses from fall and spring:

fall 1972	spring 1973
49% ten or more	34% fifteen or more
26% several, but not ten	35% several, but not fifteen
24% three or fewer	31% three or fewer

A number of other revised items show similar results, but in spite of limited success many items on the revised H/S HES fell short of the ideal distribution, including items 2, 8, 10, 14, 15, 16, 17, 20, 22, 24, 25, 26, 27, and a number of

checklist items. Some of the item distributions were skewed enough to justify removing the item immediately, but alterations were postponed until the overall factor analysis was completed.

Correlations. The intercorrelations of all 47 items are presented in Table IV-2. No item-total correlations are presented as the scales have not yet been devised. In interpreting the item directionality it must be observed that for most items a low score is favorable. Decisions about direction can be resolved by looking at the items in Table IV-1, because the first response is always coded 1 in the computer files. Thus, "fifteen" books is coded one, and "three or fewer" is coded 3; likewise, "yes" in the checklists is coded 1 and "no" is coded 2. In general the correlations are low, with only about 25 out of 1100 larger than .30.

Factor analysis. The factor analysis of all 47 items, presented in Table IV-3, resulted in 17 factors which accounted for 66.5% of the variance. The list of items loading on each factor is presented in Table IV-4. Although many of the factors consist of reasonably interpretable items, such as factor I (checklist methods factor), factor II (tester observation, negative), factor III (tester observation, positive), factor V (peer contacts), and so on for a few more, the *a priori* scales do not appear. Moreover, the measure is too factorally complex to permit an easy empirical selection of items that form interpretable scales.

In order to make progress in the formation of reliable and interpretable factors, a multi-criteria item deletion strategy was used to arrive at subgroupings of items. To do this, a series of criteria for item acceptability were established, based on: item response distributions; ability of the Home Start program to alter the item responses; subjective judgment of direct item importance, apart from indirect inferential interpretations; and correlations with inalterable characteristics, such as site, age, sex, and number of siblings. Then items having negative checks on several of these criteria were removed from further consideration. This eliminated items such as: 35, the checklist of special "events", which was found to be very site-related (urban children are better off on item 33 in almost every way compared to rural children); item 2, "sleeping at a friend's house", which had a poor response distribution, didn't seem likely to be altered by the program appreciably, and didn't seem particularly important, except by using elaborate inferences; and some items within checklist 36, household tasks,

which were found to be significantly sex-related.

The remaining items were factor analyzed according to kind of item: all the frequency items together, all checklist items together by checklist, and all observation items together. Several factor analyses were computed for each group of items, and at each step some items were eliminated based on criteria of factor interpretability and empirical item "fit". This was continued until each set of items reached a useful factor clarity involving only two or three factors made up of items that seemed both interpretable and important. Seven potentially usable scales were identified by this process.

Some arbitrary decisions were made about how to best handle the different item groups: the observation items were designated a separate instrument, to be treated separately from other items on the H/S HES; the "television" item would stand alone as a score; the "number of books" and "adult reads to child" items would constitute a scale by themselves; and the frequency and checklist items would be scored with their respective groups regardless of the outcome of the cross scale factor analysis to be performed next.

The remaining frequency and checklist items were factor analyzed together to determine the amount of overlap between items from different scales. Four factors were specified in the varimax rotation to see if the four factors from the single analysis would be recovered when the items were pooled. The results of this analysis are presented in Table IV-5, and the items loading highest on each factor are presented in Table IV-6. The results seemed more confused than expected, so another analysis was run leaving off items from the "child helps with household tasks" checklist. This was done because those items had moderately high correlations with items all through the H/S HES and it was felt that the "omnibus" character of these items might be altering the normal factor outcomes from the other items alone. Items from the remaining three scales did factor cleanly into the expected scales when this was done. In spite of the fact that the "child helps" checklist is correlated with the other factors, it seemed worthwhile to continue using it because of its possible utility as an "omnibus" scale to get quick home environment assessments without using all the other scales. This use will be investigated in future analyses with the Home Start data.

Even though several reasonably clean, useful, and varied factors appear in the final factor analysis, all but one of the a priori factors hoped for in the frequency items (1 through 32) were discarded in the analysis sequence. Just as with the fall version, the results were disappointing compared to the expectations for the measure. One of the obvious

problems is the disparity between the complex home conditions that shape child behavior and the simple information obtainable with a short questionnaire. Also, the purpose of the measure affects its design. On the one hand, it would be possible to build a reliable scale from a large, heterogeneous collection of items to serve as a global overall scale of the "goodness" of a home environment; the PSI is an example of such a measure, but from the area of cognitive child functioning. The problem with this kind of measure is the difficulty interpreting precisely what is happening when scores increase or decrease. Another kind of measure is composed of tightly constructed subscales, each measuring a unitary trait, that have relatively low intercorrelations. With such a measure a profile of change can be obtained in such a way that if one of the scales increases, say, mother involvement, then real-world changes corresponding to this change can be identified much easier than with the more global scale. The H/S HES is intended to represent the latter kind of measure more than the former, but the number of subscales is much more restricted than originally hoped for.

Because of the empirical screening procedures used to construct the H/S HES scales, it can be expected that to some extent the factors are "overfit" to the spring data, and will not replicate well when used with other data. However, many of the items from the fall 1972 version of the H/S HES which were finally used in the whole score factor analysis were very similar to those used on the present scales, so it seems reasonable to expect further replication in future data. Moreover, the items seem to make good intuitive sense, and to the extent that this reflects the reality of home conditions one would expect good replication.

Reliability. The items summed to form each of the eight scales are presented in Table IV-7. The internal consistency reliabilities for the scales are presented in Table IV-8. The reliabilities seem remarkably high considering the few items comprising each scale, but since the scales were developed using the same set of family scores that the alpha coefficients were calculated from, a somewhat inflated reliability would be expected.

Whole score descriptive data. The H/S HES whole score means, standard deviations, and standard errors of the means are presented in Table IV-8. The possible range for each scale is presented also, to assist in interpreting the means. Means were not presented for each age group because this scale is not expected to vary systematically across child ages. The actual correlations with child age for the eight scales range from .00 to -.10.

When interpreting HES and HES Observation scale scores in later analyses in the report, care must be taken to watch the directionality: for all scales except the Supportive interaction scale a numerically low score is favorable. The Supportive interaction scale is just the reverse: high scores are favorable. This is an artifact of the scoring procedure and in no way reflects on the families or factor constructs.

When the final H/S HES score form is prepared, a number of additional items will be added to some of the checklists. These will be items that most mothers will be able to respond "yes" to so that they will not be left with a negative feeling about themselves as mothers. These items will not be included in the subscores or in any analyses.

Effect of H/S HES administrator. At the request of the National Home Start Review Board, a special substudy was conducted using the H/S HES. Some of the board members felt that the fall 1972 responses appeared unrealistically favorable for many of the items, and probably represented a disposition on the part of the mothers to bias their answers in a socially desirable direction. A number of ways were explored for testing this hypothesis, and one method that was practicable within the constraints of the project selected.

The strategy was to have the community interviewers administer the H/S HES to their randomly selected families in the usual manner, but also to have home visitors from the sites administer the H/S HES, to the "other half" of the families--those randomly left out of the evaluation. The purpose was to see if the mothers responded in a more straightforward (less socially desirable) fashion to the home visitors, who presumably were on more open and familiar terms with the mothers than the community interviewers.

Two sites, Dardanelle, Arkansas, and Parkersburg, West Virginia, were willing to have their home visitors assist in this study by administering the H/S HES to the mothers not in the evaluation. In all, protocols from 65 families are available for those two sites from the community interviewers, and 60 from the home visitors. The responses for each item response category were cross-tabulated with administrator, and chi squares were calculated in order to identify significantly different response distributions.

Altogether the response distributions were significantly different for the community interviewers and home visitors on 18 items, out of a possible 101 items. Four of these occurred on the first 32 items, and 14 on the checklist items. The significant differences were distributed somewhat unequally across the four checklists: two on the "playthings" checklist;

none on the "mother teaches" checklist; five on the "visits and events" checklist; and seven on the "household tasks" checklist.

For one of the 18 differences the responses to the community interviewer were more favorable; for all the rest of the differences the responses to the home visitor were more favorable. In short, the differences were relatively few, lending confidence to the veracity of responses to both administrators; if any systematic bias was acting within those few differences it tended to be the reverse of that hypothesized. In other words, of the two administrators the mother was more concerned about impressing the home visitor.

Many of the items that differed were relatively neutral in terms of social desirability: sleeping at a friend's house; having outdoor toys; child having own plants; visiting relatives and all others from checklist 35; and setting table, sorting laundry, vacuuming, and so on from checklist 36. Two seemed more socially desirable in one direction than the other: holding child in mother's lap and watching little television. The latter item brought strikingly different responses from the two groups:

	Community Interviewers	Home Visitors
two hours a day	68%	35%
every day, but not two hours	18%	42%
several times a week or less	14%	23%

In this case, it almost seems as if the community interviewers evoked the most accurate responses, if one assumes that home visitors might look unfavorably upon mothers who let their children watch television several hours each day.

All in all, the results of this substudy seem to support the current item format and administration procedure. Moreover, all but one of the items on which significant differences occurred were eliminated from the scale before the results of this substudy were known. The remaining item, incidentally, is the television item cited above.

Summary. The High/Scope Home Environment Scale appears to be in acceptable form for use in the formal Home Start evaluation. Based on the analyses reported here the revised version has been shortened from 101 items to 26, which are separated into six subscales measuring warm mother involvement, child's expressive playthings, formal mother teaching, household tasks child does, amount of television child watches, and the child's

exposure to books and adult readers. Two community interviewer observation scales measure the mother's supportive interaction and punitive interaction during the testing situation. Reliabilities for the scales are high considering the few items on each scale, ranging from .59 to .78. There appear to be ample ceilings on each of the scales to measure growth that might occur during the year. Even though many promising scales are on the revised H/S HES, most of the a priori factors had to be discarded because they were not supported empirically by the analysis outcomes.

A substudy conducted with the H/S HES to determine if mothers' responses were biased in a socially desirable direction seemed to support the adequacy of the current item format and administration procedures.

Parent Interview (PI)

The Home Start Parent Interview was originally developed for the fall 1972 data collection to obtain information about the child's medical history, the parent's involvement in activities outside the home, and the parent's use of community resources. It was also used as a vehicle for obtaining feedback from the parents on their reactions to the testing and interviewing. These features were retained in the revised Parent Interview used in the spring 1973 data collection. Of the modifications made for the spring, the most important ones were:

- Simplifying the medical questions, but adding a question to get information on the Home Start program's role in obtaining medical and dental care;
- Adding several questions to obtain more demographic information about the respondent and her family, including information on number and ages of the focal child's siblings, information to determine who the respondent was, the age of the mother, and employment status and educational attainment of parents (the employment and education status data were used to derive an index of SES used in the whole score analyses in Chapter V);
- Questions were added to find out how long the child had been in the program, whether he had had previous Head Start or preschool experience, and whether the child was currently enrolled in a Head Start or preschool program.
- A series of open-ended questions were added to obtain information on the parent's perceptions of the Home Start program, both as it affects her child and as it affects herself.

This report of PI data is designed to present a summary picture of the Home Start families involved in the summative evaluation. For details of the item response distributions in terms of the percent of responses in each of the categories, see Table IV-9. The findings are summarized here under five headings: Family and child characteristics, medical and dental care, parent participation, use of community resources, and reactions to the Home Start program. Findings on the parents' reactions to the testing were reported in Chapter II.

Family and Child Characteristics

The "average" Home Start family consisted of four children, including the focal child. The focal child had an average of one younger and two older siblings. The number of siblings ranged up to 11 and 10.5% of the families had only one child. In 34% of the families the focal child was the eldest; in 54% he (or she) was the youngest. About 6% of the focal children were in a preschool or Head Start program before entering Home Start and the average length of time was seven months. About 8% of the mothers (actually, one respondent was a father and nine were other relatives) reported that their focal child was in a preschool or Head Start program while in Home Start. The focal child had been in Home Start for a mean of 10.5 months.

About 30% of the mothers and 29% of the fathers were high school graduates and the average grade level completed was 9.6 for mothers and 9.1 for fathers. Nineteen percent of the mothers were working (12% full-time), whereas 56% of the fathers had jobs, most of which were full-time.

Medical and Dental Care

There were some modifications in these items, but some comparisons of the fall and spring data are possible. A large percentage of the children continued to receive their innoculations, with a slight increase in the percent responding "yes" from fall to spring. In the spring, the child had gone longer since seeing a doctor (4.8 months vs. 2.7 for the fall data). When asked whether the last visit was for something wrong or for a checkup, slightly more in the spring were for something wrong. This could be due to children getting more colds during the winter months. The fall-spring difference in time since seeing a doctor could be related to the health checkups typically carried out when children enter the program. A new question asked in the spring revealed that about 41% of the doctor visits were arranged with the help of Home Start personnel.

Dentists were visited almost as frequently as doctors. The mean length of time since the last visit was 3.8 months. Home Start personnel helped arrange these visits, which were usually for a checkup.

Parent Participation

Parent participation was examined in relation to Home Start activities and to other community organizations. Participation in church organizations or social clubs and in youth groups such as 4-H or scouting was slightly higher in the spring than in the fall, while participation in parent-teacher associations was slightly lower. About 40% of the parents reported being active in no group or organization at all.

When asked about Home Start Policy Council meetings, 36% of the parents said they had been to one of the meetings. Parents were involved to a greater extent in social activities --167 parents reported that there had been get-togethers such as picnics and 81% of these parents attended.

Use of Community Resources

Parent awareness of the community resources was very high. For the basic supportive and medical services virtually all Home Start parents had heard of welfare, food stamps, public hospitals and public health clinics. Over 80% were aware of medicaid, food commodities and planned parenthood, and more than two-thirds had heard of mental health clinics and family counseling. Over three-fourths of the parents were aware of the other services listed in item 53.

The public health clinic was the service which the largest percentage of the families used. It was also the service which Home Start assisted in most often. The other services listed in item 53 were used by fewer than half of the families and Home Start assisted fewer than 10% of the families. However, Home Start was involved with a substantial proportion of the families that actually used some of the services. About one-third of the families using the public health clinic and about half of the families involved in Head Start were assisted by Home Start. The Head Start involvement is not clear, however, since item 32 reported only 12 children enrolled in preschool or Head Start.

Reactions to the Home Start Program

The spring PI contained eight open-ended questions designed to find out what the parent and child liked about the program, what the child didn't seem to like, and what benefits were expected in the future.

Item 33 asked what activities were especially interesting to the child. The responses to this item seemed to match fairly closely with the responses to item 36 (what does your home visitor do that's especially good?). This indicates that those things the child enjoyed most were fairly well in line with the mother's ideas of what is good for the child. Educational activities received the most responses on both items with "general positive" comments and "Home Visitor" about tied for second place. The only major discrepancy is field trips. Parents rated field trips as being very interesting but seemed to consider them of little value. Socializing was considered about the same way but to a lesser degree. Health and nutritional activities were rarely mentioned on either list.

Item 37 refers to future benefits to the child resulting from being in Home Start. School readiness was mentioned most often and general positive comments were second. Specific comments about social adjustment were the only other benefits mentioned more than ten times. The nutritional aspect was not mentioned at all and improved parent teaching was mentioned only twice.

Item 38 asked what activities were especially interesting to parents. The most frequent responses were nonspecific positive comments. When parents did mention specific activities social activities involving groups (field trips, picnics, group meetings, workshops, etc.) were mentioned by a substantial number. Educational activities were mentioned by about 17% of the parents. Nutrition and health activities were interesting to only about 5% of the parents. Development of child's social behavior and having a teacher come to the home received only two responses.

Item 39 referred to expected future benefits to the parent. These responses were the most evenly distributed of all the open-ended questions. This could indicate that the parents were looking forward to a wide range of benefits from participating in Home Start and that the program can be flexible enough to meet the needs of a very diverse group of parents. It is interesting that the most often-cited benefit was improved "parent teaching skills", and the second benefit was "improved approach to child rearing"; the same benefit was rated quite low when one parent was asked about future benefits for the child.

Item 40 was a global question about the entire project and its importance to the family. Again, on this list the nonspecific positive comment appeared most often and educational development was second.

Item 35 asked what things the child didn't like about Home Start and item 42 asked for suggestions to improve Home Start. About the only consistency between the "don't like" list and the "make changes" list was the increase in the home visits. A suggestion to change materials did not appear on the "don't like" list, which suggests that parents were not overly unhappy with the equipment available. The five children who didn't like going to the doctor or dentist seem to be a rather small proportion.

Summary

The Parent Interview appears to provide interesting information about the parents, the children, the involvement of parents in the program, the use that parents make of community resources and their reactions to the program itself. There was sufficient consistency in responses from fall to spring to indicate that the responses are valid. The problem of response bias is, of course, greater with the interview than with the child measures, so it is important that the community interviewers continue to receive careful training in the administration of the PI. To simplify the procedure somewhat, and to reduce some of the redundancies among questions, several items will be deleted and/or reworded for the fall 1973 data collection.

8-Block Sort Task

One of the more widely used procedures for assessing mother-child interaction in a teaching context is the 8-Block Task developed by Hess and Shipman (1965) in their Chicago study of maternal teaching styles. The 8-Block has been used in the Planned Variation Head Start evaluation and in the ETS-Head Start Longitudinal Study, which was one of the reasons it was originally selected for use in the Home Start evaluation. Although the situation created by the task is artificial it does provide the opportunity for direct observation of the mother's behavior that complements the verbal reports obtained from parents by the Home Environment Scale.

There are three stages in the 8-Block Task. First the community interviewer guides the mother through the block sorting procedure in a standardized way, then the mother is asked to teach the task to the child, and finally the child is asked to demonstrate whether he has learned the principles according to which the blocks are sorted.

In the first stage, the community interviewer teaches the mother how to sort eight wooden blocks into four quadrants of a 12" x 12" board. The blocks vary on four dimensions--height (tall or short), mark (X or O on the ends of the blocks), color (red, yellow, green, or blue), and shape (rectangular or circular in cross-section). The relevant dimensions for sorting are height and mark. In the second section of the task, the mother teaches her child how to sort the blocks. Although the community interviewer proceeds through a series of discrete steps in a fixed order, the mother is told she can teach the child in any way she wants. The third stage of the task begins when the mother tells the community interviewer that she is finished with her "teaching". The community interviewer then gives the child two new blocks (one at a time) and asks him to place them on the board in the group where they "belong". The results of the child's placements and his explanations of the placements indicate whether the child has learned the sorting task and can generalize the sorting principle to new objects that vary on the same dimensions.

The complete task administration was tape recorded using battery-operated cassette tape recorders. The tapes were returned to the High/Scope Foundation for coding and subsequent analysis. Nonverbal behavior (mother moving blocks and punishing child and child moving blocks) was recorded by the community interviewer on a score form.

The 169 tapes from the spring data collection were all coded by two individuals. Coding reliability was established by the independent coding of a sample of 16 of the tapes. The reliabilities of the codings are reported in Chapter II (see Table II-7).

Although the 8-Block Task was administered in the same way in the fall and spring, fall-spring comparisons of the mother-child interaction variables would not be appropriate because of substantial modifications to the coding procedure. Several new scoring categories were added (e.g., correction categories) and some of the other categories were redefined. In addition, the verbalizations were unitized in a way designed to better retain the complexity of the mother's speech patterns, thus altering the comparability of the basis on which the variables were coded. The results reported here, therefore, are based on the spring data only, with the focus being the identification of groups of variables or factors that describe the mother-child interaction in a conceptually meaningful way.

Spring 1973 Item Analyses

Response distribution. A list of all the coding categories can be found in Table IV-10, which also contains the mean number of occurrences of each category and the distributions of the total number of occurrences (the definitions used in coding can be found in Appendix A). As with the data from last fall, the distributions are highly skewed, with many mothers making a small number of responses in a category and a few mothers exhibiting very high frequencies. In order to reduce the effect of the extreme scores, a square root transformation was made of the total frequencies and the transformed scores were used in subsequent analyses involving correlations and factor analysis.

The mean number of events coded for each variable gives a picture of the relative amounts of these behaviors in the mother-child teaching task. There was a lot of block movement, with the child moving blocks about 2½ times as much as the mothers. The talking consisted mostly of comments about the task that did not mention the specific task dimensions of height and mark (the "unclassified" categories). When mothers were talking about the blocks, however, they were more likely to mention the specific dimensions than when they were making requests of the child. Feedback to the child was most likely to be in the form of acknowledgments and corrections, with mothers praising their children less than once, on the average and practically never punishing. All of these events occurred in the mean mother-child teaching time of 8.8 minutes. The relationships among the mother-child interaction variables were investigated through factor analysis of the intercorrelation matrix (see below). When asked to place

each of the two blocks and to explain his placement, the child's responses were scored as follows: For placing the block in the correct group, the child received 2 points; if the block matched the group on only one dimension, the child received 1 point; and if the block placement was completely wrong, the child received no points. For the explanations, the child received a score of 2 if he explained his placement in terms of both dimensions, a score of 1 if his explanation referred to only one dimension, and a score of 0 for a completely incorrect explanation. The distribution of child responses for block placement and explanation are presented in Tables IV-11 to IV-14. The figures for correct placements (according to both dimensions) clearly indicate an increasing ability to learn the task as children get older. Fewer children are able to explain their block placements, but this ability also increases with age.

Correlations. Before computing the intercorrelation matrix of the 8-Block variables, several variables were omitted because of extremely low frequencies. If practically all of the cases for a variable had a total frequency of zero or one, that variable was deleted from the analyses. After these deletions were made 38 mother-child interaction variables remained. The mother teaching time and the total child task score were then included and the intercorrelation matrix computed. For the 38 interaction variables the score used was the square root transformation of the total frequency of occurrence (see Table IV-15).

Factor analysis. The 40 variables entered in a principal components factor analysis with varimax rotation are listed in the key accompanying the correlation matrix. The variables which load on each of the factors are listed in Table IV-16 . Eleven factors were extracted which accounted for 69.6% of the total variance. One of the first things apparent in the variable loadings is that there is considerable overlap. If loadings of .30 or higher are taken as indicating "substantial" loadings (Nunnally, 1967), then several of the factors are not uniquely defined by a specified set of variables. Factor I, for example, although it accounted for 13.1% of the variance, only contained two variables that did not also load on other factors. On the other hand, a few of the factors were clearly defined by only one or two variables. The discussion that follows is an attempt to interpret these factors in light of the nature of the mother-child interaction as conceptualized by the 8-Block coding system.

A large number of variables have loadings on Factor I so its interpretation is not completely clear. There is, however, a general feature of "irrelevancy" that characterizes most of the variables. The "unclassified" categories of "request" and "talk" appear four times, along with mother and

child "direct request" (which are also requests that do not specify the dimensions of the blocks). Mother teaching time has its highest loading on this factor as does "child move blocks". Because of the high frequency with which children moved blocks and the large number of "unclassified" verbal responses, it is understandable that the teaching time is an important dimension of this factor.

Factor II (accounting for 9.9% of the total variance) combines variables in which the mother requests talking and the child talks. For most of these variables, the talking is specific to the dimensions of the task. A large number of the variables describing the mother's behavior load on Factor III (accounting for 10.8% of the variance). This might be called a "complexity" factor since most of the "request", "talk", and "correction" variables involve the task dimensions of height and mark. Three of the higher loading variables consist of the mother using both dimensions of the task in her statements. Factor IV accounted for 6.8% of the variance and consists of variables that describe miscellaneous mother-child verbalizations that have little to do with the actual task of teaching the block sorting.

Of particular interest to many investigators of the effects of mother-child interaction is the relationship between the mother's behavior during teaching and the child's performance during the final questioning of the child. The child's score on the task at the end of the 8-Block loaded on Factor V (4.7% of the variance) along with "child talk about--height and mark". This suggests that the critical variable affecting child success is the extent to which the child actually talks about the specific dimensions of the blocks. And, although one mother variable ("request understanding") has a moderate loading on this factor, there is no strong indication that any of the mother "teaching" variables relate to the child's successful completion of the task. There is a danger in emphasizing this lack of relationship, of course, in that correlations do not provide evidence as to the causal nature of the relationship. It is quite possible that children who are already capable of describing the height and mark of the blocks also are successful during the final placement and explanation, and that little or no "teaching" is required by the mother. Additional analyses should be carried out to investigate whether the mother's teaching style varies as a function of the ability of the child (perhaps as assessed by the PSI or DDST). If the 8-Block is to detect changes in mother teaching behaviors, it may be necessary to restrict future analyses to those cases for which there is some indication that the child actually requires teaching.

The remainder of the factors are, for the most part,

interpretable, and may provide useful information relating to the development of a procedure for assessing mother-child interaction. Factor VI, for example, might be termed a "positive feedback" factor since mother "praise" and "acknowledge" load highest; Factor IX is "task-irrelevancy talk" (talking about the irrelevent dimensions of the blocks). Each of these combinations of variables might be used in deriving "scores" that would subsequently be used in the assessment of mother-child interaction.

Summary

The analysis of the 8-Block task was limited somewhat due to the fall-spring changes made in category definitions. It can be said, however, that a reliable coding procedure has been developed that results in a set of variables that may, through further investigation of the factor structure suggested here, be used in defining a procedure for the assessment of mother-child interaction in a teaching situation.

V

RELATIONSHIPS AMONG MEASURES

Up to this point all analyses have examined one measure at a time, looking first at the internal characteristics and then briefly at the overall means. In this chapter the revised measures are investigated for their relationships with one another. The entire battery of measures is viewed almost as though it were itself a scale made up of items, except that no attempt is made to compute subscores by adding together selected whole scores.

As in past chapters, correlations and a principal components factor analysis will be computed. This will help identify how many distinctly different family and home characteristics the battery as a whole is measuring. This serves the dual purpose of identifying areas of redundancy among measures to facilitate decisions about the battery for fall 1973, and of explaining relationships among scores that may be related to real life conditions influencing child development in an important way.

Two statistical techniques will be used in this chapter that have not been used in past chapters. The first is a modified factor analysis that uses multiple squared correlation coefficients in the diagonals of the correlation matrix. The multiple correlation coefficients are obtained by using all of the scores in the factor analysis to predict each score in turn. Essentially, then, only the variance that each measure has in common with all of the other measures is used in computing the factors, instead of using the total variance. The second statistical technique involves predicting some variables from a combination of others using multiple regression methods. This permits identifying the amount of variance for one variable that is explainable by a set of other variables. In this chapter the relationship between the Preschool Inventory and all other variables is explored in that fashion. Also, the unique contribution of the Concept Development Test to the overall battery is assessed in the same way, to see if it adds enough information in combination with the PSI and DDST Language scores to justify its continued use.

Factor Analyses of Complete Battery

Correlations. Correlations among the whole scores are presented in Table V-1. Aside from providing the imput for the factor analysis, specific coefficients from the inter-correlation matrix can serve as validity estimates for several of the scales. For example, a substantial correlation between the Test Orientation scale of the POCL and the Task Orientation of the SBI would help validate both scales. The characteristic measured by the Test Orientation scale from the POCL should be a specific instance of the characteristic measured by the Task Orientation scale of the SBI. The correlation between these two is, in fact, .41, which is entirely satisfactory. The correlation between age and specific measures of cognitive development, if the development is age related, should also be substantial.

Factor analysis results. Two separate factor analyses of the 27 whole scores were run. The first used unities in the diagonal as the initial communality estimate; the second used the squared multiple correlation in the diagonal as the communality estimate. Nine factors, accounting for 67.0% of the total variance, were extracted from the first analysis. Three factors, accounting for 70.2% of the common variance, were extracted from the second analysis.

To illustrate the difference between these two procedures, consider all 27 variables as comprising 100% of the total variance. In the first analysis, 67% of this total could be accounted for by 9 factors. Each variable in the analysis is considered to have two parts, common factor variance and unique factor variance. In the first analysis, both the common and the unique were included in the analysis. In the second analysis, only the common variance was factor analyzed. The second analysis would indicate that approximately 56% of the total variance was unique, and 44% was common. Slightly more than 70% of this 44% was accounted for in the second analysis.

The loadings from these two factor analyses and their respective communality estimates are presented in Table V-2.

The first factor from each analysis was clearly a cognitive development factor. Age, height, weight, DDST Fine Motor, PSI, DDST Gross Motor, DDST Language, and Concept Development all loaded high on the first factor, whether from the factor analysis of total variance or of common variance. The 8-Block child score also loaded somewhat on this factor (.34 in the "total" and .42 in the "common"). In addition, Test Orientation from the POCL loaded .38 on this factor in the "common" analysis.

The second factor in the "common" analysis might be called a "child rearing" factor. The two food scales loaded high on this factor, with mother involved, household, and television from the H/S HES also having low (.35, .44, and .39, respectively) but salient loadings. The two food scales accounted for most of Factor III from the "total" analysis, although the other three scales from the common analysis had loadings hovering around .30 on this third factor. High scores on this factor would be characterized by eating a lot of food, eating a lot of nutritious food, helping in household tasks, and having available a lot of books.

The third factor from the "common" analysis can be defined by the Test Orientation scale of the POCL and the Task Orientation scale of the SBI. These two scales did not load highly together on the "total" analysis. Other scales loading saliently on the third factor of the "common" analysis were sociability from the POCL, playthings, SBI hostility, having books, 8-Block, SBI-Extraversion, the DDST Language and the PSI.

Several scales showed very little common variance, which indicates that each of these should be high in unique variance. These were mother teaches, sex, SES, H/S HES supportive, H/S HES positive, and television. In the "total" analysis, watching television was the only scale contributing a high loading to the ninth factor. Supportive and punitive defined Factor VII in the "total" analysis, although both loadings were of the same sign. Opposite signs would have been expected if the mother were rated high on one but low on the other. In the "common" analysis, these two scales had their highest loadings on the same factor (Factor III), but these loadings were small. However, the loadings were of opposite sign. SES was the only scale to load high on Factor VI of the "total" analysis. In general, the uniqueness interpretation was borne out by the "total" analysis.

Sex and mother teaches, along with mother involved and household tasks, loaded moderately on Factor V of the total analysis. This factor might be labelled a "need achievement" scale, because high scores would be characterized by having the mother teach many things, the child be male, the mother involved in play with the child, and the child helping in household tasks.

The remaining factors from the "total" analysis include Factor II, which seems mainly to be a SBI factor-Extraversion and Task Orientation have the highest loadings, although playthings, household, and books also have moderate loadings here, as does Hostility from the SBI.

Factor IV from the "total" analysis was the POCL factor--both Test Orientation and Sociability loaded highly here. In addition low but important loadings were obtained for 8-Block, PSI, Concept Development, Task Orientation, and mother involved. The tester, who rated the child on the POCL, was present for and observed the child's behavior on these measures of cognitive development.

Factor VIII from the "common" analysis had two scales loading highest: DDST-P/S and SBI-Hostility. A child low on personal/social development also tended to be rated as hostile by the parent. Children low on the Personal/Social scale are not very self-sufficient.

These Factors (II, IV, and VIII from the "total" analysis) indicate that a large proportion of the uniqueness is actually method variance.

Major Predictors of Preacademic Performance

Many questions about the interrelationships among measures are of interest in any evaluation having a broad battery of divers measures. One question in particular recurs constantly--what determines a child's level of readiness skills? Using variables from different areas of the measurement battery it ought to be possible to identify some of the predictors of school readiness, or at least to dismiss some variables as being unimportant, based on the outcomes of selected multiple regression analyses. Four different groups of variables were entered into a stepwise regression analysis to identify which few variables predict the most PSI variance. The High/Scope Home Environment Scales were used as the first group of predictors; Height, Weight and Food Intake as the second group; other cognitive measures as the third group; and the whole battery as the fourth group. The results for each of these follow.

Using the 8 H/S HES scales to predict PSI performance, only four of the scales predict a significant amount of PSI variance, totaling 13.2% for all four. The best predictor among these is the "number of children's books" and "adult reads to child" scale, accounting for 6.0% of the variance alone; the "mother teaches child" scale is next, adding 3.2% to the variance; the punitive intervention scale was next, adding 2.4%; and the last variable to enter was "watches television" which adds 1.7%; the remaining four H/S HES scales do not contribute significantly to the predicted variance.

The next set of PSI predictors included Height, Weight, Food Intake nutrition score, and the total Food Intake.

Height was the best predictor, accounting for 24.3% of the variance; weight was next, adding 1.8%; neither of the food scores contributed a significant amount of variance. The strong relationship between PSI totals and Height is not very informative because the ages of the children are not constant. Both the child's height and PSI total vary directly with the age of the child.

As evident from the whole score correlation matrix and factor analysis, there is a lot of overlap among cognitive measures. To examine this further, a stepwise regression analysis was used to predict the PSI using the four DDST scales, the Concept Development Test, the 8-Block child score, the SBI Task Orientation scale, and the POCL Test Oriented scale. The DDST Language scale was the best predictor, accounting for 48.1% of the variance; the Concept Development Test was next, adding 10% more; third was the POCL Test Oriented scale, adding 4.8%; last was the 8-Block Task score, adding only 0.8% to the other three. If the alpha reliability coefficient is interpreted as the percent of true score variance of the PSI, then 77.6% of the true score variance is predicted by the other cognitive measures.

With such a small amount of unshared variance among the PSI, DDST Language, and Concept Development Test, the question which arises is "why bother to collect all three?" The instrument analyses have shown all three to be fine cognitive measures, but if they measure the same characteristic there's no justification for the expense of administering all three. Since the Concept Development Test is newer, has not yet been used outside of Home Start, and has the lowest reliability (.64), it was singled out for further scrutiny. Using the same stepwise regression approach as above, it was found that the PSI, DDST Language, and DDST Fine Motor together predict 55.0% of the total Concept Development Test variance, or 85.9% of the true score variance. Clearly, with this power of prediction from the other cognitive and perceptual-motor measures there is little utility in using the Concept Development Test in the formal Home Start evaluation in fall 1973. In addition, there are theoretical reasons for not expecting the Home Start program to appreciably alter the rate of development through Piagetian stages. The money saved by not administering it could be applied in two ways to improve current evaluation activities: first, by collecting the full battery on the Head Start comparison group (this has already been proposed by the evaluators, but it is not clear where the resources to pay for the additional testing will come from); secondly, to increase the level of resources available for the analysis of the 8-Block Task (the current analysis leaves many problems unresolved for which there are no readily apparent solutions).

Thus it is recommended that the Concept Development Test be dropped from the National Home Start Battery immediately.

Returning to the investigation of the PSI, a final stepwise regression was performed to see which variables from the entire battery would significantly predict child performance as measured by the PSI. All told, seven variables were able to predict 70.7% of the total PSI variance, or 85.2% of the true score variance. Of that amount, the DDST Language and the Concept Development Test predicted 57.7% of the variance; this figure is not very informative because it only represents the same trait that the PSI taps, measured a slightly different way, rather than being a "causal"-type predictor. The remaining 13.0% of the variance is predicted by the following five variables, listed in order of importance:

- POCL Sociability;
- Age;
- H/S HES "Watches television";
- H/S HES "Mother teaches child";
- SBI Hostility-tolerance.

VI

PRELIMINARY SUMMATIVE FINDINGS FROM FALL 1972 TO SPRING 1973

This chapter presents early estimates of program effectiveness and examines them to see of they are favorable or not. The estimates are based on measured changes from fall 1972 to spring 1973 for families in the summative evaluation both times. These data were part of the pilot phase of the National Home Start Evaluation, which focused on refining measurement methods while the sixteen projects were getting underway. The formal program evaluation begins in fall 1973, and differs from the pilot evaluation in having a much larger sample, as well as a control group and a comparison group.

Questions about Home Start's effectiveness are so tantalizing to so many people right now that they cannot be ignored. Nevertheless, there are three serious problems which limit the meaning of any findings presented at this time. The first problem is the lack of appropriate comparison data for use in interpreting the Home Start data. No data were collected from similar families who were not enrolled in Home Start, and many of the measures have no normative data to serve as a standard against which to judge the growth of Home Start children. The reason for the lack of comparison data is simple--the pilot evaluation was designed to assess the measurement battery, not the program--but the substitute comparisons presented in this chapter are neither simple nor entirely satisfactory.

The second problem is the small number of Home Start sites and families included in the fall and spring data collections. Only six* out of the sixteen sites were included, and fewer than twenty families from each site were measured both fall and spring. Thus, the results presented in this chapter are based on about 100 families comprising only 9% of the 1100 Home Start families enrolled nationally in spring 1973. The families were randomly selected, and therefore can be considered representative of all families in their respective sites; the sites were not selected randomly, however, so from a strictly scientific point of view the results in this chapter cannot be generalized to the other ten sites.

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* Huntsville, Alabama; Dardanelle, Arkansas; Wichita, Kansas; Cleveland, Ohio; Houston, Texas; and Parkersburg, West Virginia.

The third problem is that data were collected during the startup year of the three year national program. Projects were just getting underway, so staff were not very experienced and many fundamental problems of project content and organization were just being worked out. Thus the results which follow probably do not represent the Home Start at its best, even though some of the results reflect very favorably upon the program.

In the face of these three problems, it would obviously be inappropriate to pretend that the preliminary extimates of program outcomes are anything more than rough approximations; but even such approximations will help to indicate program trends until data from the formal program evaluation become available one year from now.

The next section explains the methods used to arrive at the findings, and the following sections discuss findings for each measure in turn.

Method. This section describes the statistical analyses performed on the fall and spring data to identify large changes, and the method used to judge their relative importance. Overall information about instrument characteristics and data collection for spring 1973 is presented in a companion volume to this report, and for fall 1972 in Interim Report II.

Four of the child tests and rating scales administered in fall 1972 can be used in the change analyses because they were administered in essentially the same form in spring 1973: the Preschool Inventory, the Denver Developmental Screening Test, the Schaeffer Behavior Inventory, and the Pupil Observation Checklist. Of these, only the Preschool Inventory has normative data in a form that permit comparison with the Home Start data.

Two kinds of analyses were performed for each measure to assess changes that occured from fall to spring. First, a t-test for correlated samples was calculated on total scores to identify changes large enough to reach statistical significance. Second, each individual item from the child measures was examined for significant change using either a chi-square test, if the items were scored pass/fail, or a t-test, if the items were continuous rating scales. The chi-square used was McNemar's test for correlated proportions.

A means for determining the importance of fall to spring changes had to be devised for interpreting the findings in this chapter. Statistical tests help pinpoint large changes,

but they do not indicate the educational meaningfulness of those changes. For example, on the child development measures used in the Home Start battery one might expect statistically significant increases simply because all children matured six months between the fall and spring data collections. In this case, statistical significance does not in itself indicate whether the observed growth was greater or less than normal, or whether the program influenced growth at all. Ordinarily either a control group or test norms are used for comparison, but neither were available for use in this analysis.

To assess the importance of statistically significant fall to spring changes reported in this chapter, an estimated growth line was calculated for each measure based on the distribution of fall scores across different aged children. For example, if fall scores for five-year-olds average 15 points on the Preschool Inventory, before the children were involved in any educational program, then under the same conditions one would expect four-and-a-half year old children to score 15 in the spring, when they became five years old. But if they participate in a special program such as Home Start, and their actual scores in the spring average 16, it is possible to infer that the program helped increase their growth by one point over a six month period. Estimated child scores for any age within the range of fall ages can be calculated by entering fall data into the following regression formula:

$$\begin{pmatrix}\text{predicted}\\ \text{test}\\ \text{score}\end{pmatrix} = \begin{pmatrix}\text{correlation}\\ \text{between age}\\ \text{\& test scores}\end{pmatrix} \times \frac{\begin{pmatrix}\text{standard deviation}\\ \text{of test scores}\end{pmatrix}}{\begin{pmatrix}\text{standard deviation}\\ \text{of age}\end{pmatrix}} \times \begin{pmatrix}\text{age of}\\ \text{predicted}\\ \text{test score}\end{pmatrix} - \begin{pmatrix}\text{fall}\\ \text{mean}\\ \text{age}\end{pmatrix} + \begin{pmatrix}\text{mean}\\ \text{test}\\ \text{score}\end{pmatrix}$$

Although this method permits an assessment of the importance of obtained fall to spring changes, it is not without flaws. The most important drawback is that the fall scores were from children who had taken the test only once, but the spring scores are from children who have taken the test twice; thus part of the observed "child growth" might be simply due to practice in taking tests--an artifact of participation in the evaluation--rather than true growth resulting from participation in the program. In the absence of a control group there is no adequate way to estimate this effect, or others of a similar nature.

Next, changes for each total score and item will be presented for the four child measures used fall and spring.

Preschool Inventory. The PSI is a general measure of children's achievement in areas that are often regarded as necessary for success in school. Children are asked questions of general knowledge (e.g., "What does a dentist do?") and basic concepts (e.g., "Put the blue car under the green box."). The 32 item version of the PSI was used in this evaluation.

Children increased an average of 3.47 points from fall to spring on the PSI, as reported in Table VI-1, which is statistically significant. Expected growth reported in the same table is 1.61 points, estimated from fall scores using the method described in the previous section. Thus Home Start children gained more than twice as much on the PSI as one would predict from the distribution of fall scores.

Another estimate of normal growth expected in a six month period is 1.69 points, based on the average six month gains of the PSI norm group computed from Table 13 of the Home Start Interim Report II: Summative Evaluation Results. This, too, indicates that the measured growth of the Home Start children on the PSI was more than twice as much as expected. The similarity between the two predictions derived in different ways helps give confidence in the regression method for estimating growth, the only available method for the Denver Developmental Screening Test which has no normative scores.

The average fall and spring PSI scores for Home Start children are plotted in Figure VI-1, along with the estimated growth lines based on fall Home Start scores and on average PSI scores for children of different ages in the PSI norm group.

The item change analysis reported in Table VI-2 indicates that Home Start children made significant increases on 15 of the 32 items, and did not decrease significantly on any. The increases occurred across many categories of items, including body parts, general information, concepts, perceptual-motor skills, and colors, indicating that the large average increase reported in Table VI-1 is not merely due to a narrow category of items.

Denver Developmental Screening Test. The DDST was designed to aid in the early discovery of four kinds of developmental problems in the language, fine motor, gross motor, and personal-social areas of functioning. It is primarily intended to be used as a diagnostic screening procedure with individual children to identify those who are developmentally abnormal. The test was not designed to yield scale scores or a total score, but for the purposes of the Home Start evaluation scale scores were obtained by adding together items within each of the four separate areas.

Scores from all four of the DDST scales increased from fall to spring, as shown in Table VI-1, three of them significantly--Language, Gross Motor, and Personal-Social. There is no accurate way of obtaining equivalent comparison scores from the normative data given in the DDST manual, so it is necessary to rely on estimated growth from fall Home Start scores in order to interpret the significant information. Calculations indicate that the expected DDST Language score increase is .37 of an item, on a scale of six items. When compared to the actual fall to spring increase averaging .62 of an item* it can be seen that Home Start children grew more than half again as much as expected on the language subscale. Table VI-3 shows that the children made significant increases on all but the prepositions item.

Actual growth of Home Start children on both the DDST Fine Motor and DDST Gross Motor scales was less than predicted, as shown in Table VI-1, in spite of the fact that the Gross Motor increase was statistically significant. Predicted growth for the Fine Motor scale was .63 compared to .24 measured, and predicted growth for the Gross Motor was .72 compared to .49 measured. This seems to suggest that the Home Start program has not had the same impact on motor skills as it seems to have had on preacademic and language skills. Table VI-3 shows that on the Fine Motor scale Home Start children gained significantly on four out of nine items, and decreased significantly on one. The item which decreased significantly has been identified as a poor item because of its near zero correlation with the total Fine Motor score, and will be dropped from the scale for future use. Two out of nine Gross Motor items increased significantly from fall to spring, and one decreased significantly. The item which decreased appears to have been scored wrong in the fall by many community interviewers, so the apparent decrease was probably an artifact of the different measurement methods used fall and spring. The same is true for item 7, although the decrease in this case did not reach statistical significance.

Home Start children increased significantly on the DDST Personal-Social scale from fall to spring, as shown in Table VI-1, and the measured .40 increase was almost double the predicted increase of .24. In spite of the overall significant increase, no individual item changed significantly.

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* On a five item scale--item 1 was deleted because it was scored differently in the spring and fall.

Schaefer Behavior Inventory. The SBI consists of 15 descriptive statements of child behavior that are read to the child's mother. Two typical items are "Stays with a job until he finishes it" and "Watches others, but doesn't join in with them." The mother indicates the degree to which the description fits the child by responding on a scale from 1 to 7. The SBI contains three scales of five items each, called Task Orientation, Extraversion-Introversion, and Hostility-Tolerance.

Home Start children had higher scores on all three scales in spring compared to fall, as shown in Table VI-1, although only the Extraversion scale increase reached statistical significance. Higher scores on the Hostility scale mean the child is more hostile, however, a negative outcome compared to other scores. The SBI is not a developmental scale like the PSI and DDST measures, because older children are not ordinarily expected to be more say, "extraverted", simply because they are older. Therefore it is not logical to predict growth from age as done with the PSI and DDST. From this point of view, then, no growth was expected on the SBI, yet mothers judged their children to be significantly more outgoing after six months of home visits. Table VI-4 shows that two items from the Extraversion scale were the only SBI items on which Home Start children increased significantly from fall to spring, and they did not decrease significantly on any items.

Pupil Observation Checklist. Upon completion of testing and interviewing, each community interviewer was asked to rate the Home Start child on a checklist consisting of eleven bi-polar adjectives such as "resistive-cooperative" or "quiet-talkative". The checklist has two scales, Test Oriented items pertaining to the child's behavior during the testing situation, and Sociability items pertaining to the child's general overall behavior as seen by the testers during two or three visits.

The fall to spring changes presented in Table VI-1 indicate that the Test Oriented scale decreased and the Sociability scale increased, neither significantly. None of the items changed significantly. The oriented scale is the only scale of all the measures to show an actual decrease from fall to spring. In part this can be attributed to the fact that this measure, like the SBI, is not a developmental scale. In this case, moreover, different raters rate the child in fall than in spring, so that rater differences are inseparably confounded with child differences. Thus it is not possible to tell whether the raters rated differently or whether the children actually changed. For now, then, the

results of the POCL are ambiguous; when the formal evaluation begins in fall there will be two comparison groups rated along with the Home Start children fall and spring, so the tester differences will no longer be a problem.

Summary of preliminary summative findings. Home Start children achieved statistically significant increases on five out of ten scales, and they did not decrease significantly on any. Four of the significant increases were larger than one would predict from normal maturation, and in some cases the gains were about twice as large as predicted. Two of the measures showing significant increases are primarily cognitive in terms of item content-- the Preschool Inventory and the DDST Language scale. The other two were primarily socially oriented--the DDST Personal-Social and SBI Extraversion scales. Thus preliminary findings indicate that the Home Start children were relatively better off in terms of pre-academic skills and sociability in the spring, after six months of home visits, then when entering Home Start in the fall. Neither of the DDST physical development scales increased significantly, indicating that the program apparently did no have the same impact on physical development as it appeared to have on mental development.

If the significant increases are interpreted as effects of the program, then the first year of Home Start looks successful indeed. The three problems described at the beginning of this chapter limit the confidence one can place in this interpretation at the present time, however. Thus the preliminary conclusions based on first year results, while very encouraging, need to be verified using the more rigorous data planned for collection during the coming year.

VII

SUMMARY AND RECOMMENDATIONS

This concluding chapter summarizes the analyses of the summative measurement battery reported in this volume. First, the characteristics of each instrument are summarized and the fall-to-spring changes are reviewed. The second section of this chapter summarizes the interrelationships that have been found among the variables in the battery. Finally, the chapter concludes with the recommendations for the 1973-74 summative evaluation.

Instrument Characteristics and Fall-Spring Change Analyses

Preschool Inventory. The PSI continues to demonstrate good reliability and the items show definite increases in percent passing as age increases. The PSI was also adequate in detecting child growth from fall to spring, both in terms of mean test scores and in terms of individual change measures.

Denver Developmental Screening Test. The DDST underwent minor revisions in item content and scoring procedures between the fall and spring testing periods. Item analyses indicated that a number of items do not show the developmental trend that would be desirable for an instrument designed to assess changes in young children. Three of the scales (Fine Motor, Gross Motor, and Language) possess adequate internal consistency reliability as well as test-retest reliability. Although factor analyses suggest that there is not a perfectly clear distinction among the four scales, these scales assess areas of child behavior that are not assessed by other instruments in the battery. Three scales (Gross Motor, Language and Personal-Social) showed significant fall-spring gains, indicating that the DDST is capable of assessing growth in children.

Concept Development Test. This instrument was newly-developed for field testing during the spring data collection. For a first attempt at a procedure for assessing development in areas considered important from a Piagetian viewpoint, the

internal consistency reliability and factor structure were considered quite adequate. Children's performance on the scale does improve with age, but the relationship is not as great as would be hoped for in a scale that presumably measures age-related developmental concepts. Since the CDT was used for the first time in the spring, no change analyses were possible.

Food Intake Questionnaire. The 24-hour recall method for obtaining information was tried for the first time in the spring. Detailed information on the quantities of food was obtained according to the nutritional value of the foods. Although no external checks were made, the procedure appears to be valid since nutritional intake scores obtained were neither too high nor extremely low. There was no measure of change in nutritional intake over time since a different procedure had been used in the fall.

Height and Weight. The measurement of children's height and weight is a straightforward physical measurement procedure. The Home Start data collection schedule has not permitted any assessment of its reliability, however, growth in both height and weight from fall to spring was found that equalled or slightly exceeded expected gains.

Hair Zinc Analysis. The analysis of zinc content using samples of hair was carried out in the fall on a trial basis. Zinc content correlated negatively with 11 of the 15 whole score variables. If zinc content were an appropriate index of nutritional status, it should correlate positively with such factors as height, weight, PSI score, and so on. Recent research has suggested that zinc alone is not sufficient for this assessment.

Schaefer Behavior Inventory. In contrast to the results obtained with the fall data, the SBI was not found to consist of three factors corresponding to the item assignments on the instrument. When the a priori scales were scored, however, there was reasonable internal consistency, although it tended to be lower than in the fall. As an instrument for measuring change, the SBI appears to be only partly successful. In terms of scale scores, only the Extraversion-Introversion scale showed significant fall-spring change.

Pupil Observation Checklist. The POCL contains two distinct and homogeneous factors which are highly reliable. Although no significant change was found from fall to spring, the fact that the testers completing the ratings were not the same individuals on each occasion complicates the interpretation of change.

High/Scope Home Environment Scale. The H/S HES has been shortened to a 26-item interview consisting of six scales. In addition, there are two scales consisting of items observed by the community interviewer. On the basis of the spring data, the internal consistency reliabilities for the eight scales were found to be quite high. The maximum scores possible on the scales appear to allow for gains that might occur during the year.

Home Start Parent Interview. The Parent Interview appears to provide interesting information about the parents, children, the involvement of parents in the program, the use that parents make of community resources and their reactions to the program itself. There was sufficient consistency in responses from fall to spring to indicate that the responses are valid. The only question regarding the capacity of the Parent Interview to detect change is the issue of response bias inherent when questions have apparent socially-desirable responses.

8-Block Task. The analysis of the 8-Block Task was limited somewhat due to the fall-spring changes made in category definitions. It can be said, however, that a reliable coding procedure has been developed that results in a set of variables that may, through further investigation, be used in defining a procedure for the assessment of mother-child interaction in a teaching situation.

Interrelationships Among Summative Variables

The results of the factor analyses of the scores derived from scales within instruments and from total scale scores indicate that a logical, interpretable structure underlies the summative measures--for the most part scores load together as they might be expected to on the basis of the instrument content or theoretical construct. The R^2 communality factor analysis further simplified the structure, suggesting three factors underlying the measures. These three (cognitive child performance, child-rearing, and social-interpersonal) seem to relate to areas in which the Home Start program would like to have an impact.

These analyses also provided information about specific instruments. It was found, for example, that the Concept Development Test accounted for very little of the total variance not already accounted for by the Preschool Inventory, the DDST Language, and the DDST Fine Motor scores. This led to the recommendation to drop the measure from future use.

Recommendations

The instrument analyses (including individual item analyses, whole score analyses, and fall-spring change analyses) and the analyses of relationships among scores have, in most instances, identified the strengths and weaknesses of the Home Start summative battery. The following recommendations are thus made for conducting the 1973-74 evaluation using the Year II evaluation design (i.e., with randomly assigned Home Start and control groups and a Head Start comparison group).

- The following instruments will continue to be used, in essentially the same format used in the spring of 1973:

  Preschool Inventory
  Food Intake Questionnaire
  Weight and Height
  Schaefer Behavior Inventory
  Pupil Observation Checklist
  8-Block Sort Task

- Three instruments will be continued but modifications have been made, to varying degrees, based upon the analyses reported in this volume:

  Denver Developmental Screening Test
  High/Scope Home Environment Scale
  Home Start/Head Start Parent Interview

- Two instruments will be discontinued on the basis of results of the analyses:

  Concept Development Test
  Hair Zinc Analysis

After the evaluation begins, modifications in the evaluation procedure will be restricted to those changes that would not affect the analysis of change from fall to spring. There will, of course, be opportunities for improvements in analytic techniques that can be applied to the data collected according to these recommendations.

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Previous Home Start Evaluation Reports

Home Start Evaluation reports are prepared approximately every six months to present results of the immediately preceeding site visits and summative evaluation data collection.

This report (the four volumes of Interim Report III: Program Analysis, Case Studies, Summative Evaluation Results, and Evaluation Plan) is the last report of the pilot phase of the National Home Start Evaluation. The next four reports will present results of the pre-measures and subsequent post-measures for the formal evaluation phase of the project.

This report makes the previous reports obsolete for most purposes, with the exception of the short Program Analysis volume from Interim Report II. There are several reasons why most people will no longer find previous volumes useful: first, the case studies from the past two reports have been combined, tightened, and updated in this report; second, the measurement battery was in a state of change in the last two reports, whereas this report presents analyses of the final version that will be used in the formal evaluation phase; third, the first attempts at analyses of home visit observations and local project cost analyses are presented in this report; and fourth, the most accurate and up to date evaluation plan for the formal evaluation phase is presented in this report.

A list of the contents of past reports follows:

August 1972: Interim Report I

Volume I:

I. FORMATIVE EVALUATION

- A. Home Start Goals and Objectives
- B. Local Program Summaries
- C. National Profile
- D. Information System
- E. Field Operations
- F. National Case Study

II. SUMMATIVE EVALUATION (PROPOSED TEST BATTERY)

- A. Measurement Issues
- B. Criteria for Selection of Tests
- C. Proposed Fall 1972 Test Battery
- D. Training and Monitoring Testers

Volume 1a:

III. CASE STUDIES

A. Huntsville, Alabama
B. Fairbanks, Alaska
C. Fort Defiance, Arizona
D. Dardanelle, Arkansas
E. Wichita, Kansas
F. Gloucester, Massachusetts
G. Reno, Nevada

Volume 1b:

III: CASE STUDIES

A. Binghamton, New York
B. Franklin, North Carolina
C. Cleveland, Ohio
D. Harrogate, Tennessee
E. Houston, Texas
F. Weslaco, Texas
G. Millville, Utah
H. Parkersburg, West Virginia

December 1972: Information System Manual

(Includes report forms, record forms, and instructions for collecting local project information about family characteristics, staff characteristics, family referrals, project finances, project donated goods and services.)

June 1973 (prepared February 1973): Interim Report II

Program Analysis Volume:

Executive Summary

I. Introduction
II. From early plans to a national model
III. Plans vs. reality: the first nine months
IV. Problems encountered by local project staff
V. Summary

Summative Evaluation Results Volume:

I. Introduction
II. Data Quality
III. Instrument Characteristics
IV. Summary and Recommendations

Volume IIa:

III. CASE STUDIES

A. Huntsville, Alabama
B. Fairbanks, Alaska
C. Fort Defiance, Arizona
D. Dardanelle, Arkansas
E. Wichita, Kansas
F. Gloucester, Massachusetts
G. Reno, Nevada

Volume IIb:

III. CASE STUDIES

A. Binghamton, New York
B. Franklin, North Carolina
C. Cleveland, Ohio
D. Harrogate, Tennessee
E. Houston, Texas
F. Weslaco, Texas
G. Millville, Utah
H. Parkersburg, West Virginia

Table II-1

FAMILIES SELECTED IN THE RANDOM SAMPLE BUT NOT TESTED

Site	FAMILIES DROPPED FROM LIST[1]			REASON FOR BEING DROPPED FROM TEST SAMPLE							
	Regular	Alternate	TOTAL	Family Terminated Program	Family Could Not Be Reached	Parent Refused Permission	Family Difficulties[2]	Child Handicapped	Child Non-English Speaking	Site Error	Miscellaneous Reasons
Huntsville, Alabama	6	2	8	2	2	0	3	1	0	0	0
Dardanelle, Arkansas	4	1	5	0	0	0	5	0	0	0	0
Wichita, Kansas	8	7	15	4	2	1	4	2	0	0	2
Cleveland, Ohio	7	4	11	5	2	1	1	0	2	0	0
Houston, Texas	3	3	6	1	1	0	1	0	2	1	0
Parkersburg, West Virginia	7	0	7	2	1	3	1	0	0	0	0
TOTAL	35	17	53	15	8	5	15	3	4	1	2

[1]Originally, regulars and alternates were randomly selected from each site.

[2]Breakdown of family difficulties:

Illness	9
Family problems	1
Mother working	4
Other	1

Table II-2

DEMOGRAPHIC CHARACTERISTICS

	Number of Families	FOCAL CHILDREN: Number of focal Children	Ages (years)[1] 3	3½	4	4½	5	5½	6	6½	Sex M	F	SIBLINGS (3-6 years): Number of Siblings	Ages (years)[1] 3	3½	4	4½	5	5½	6	6½	7½	Sex M	F	Total of Focal & Sibs (3-7½)	Average number of focal & sibs per family (3-7½)
Huntsville, Alabama	30	30	0	0	0	4	9	7	5	5	10	20	8	0	2	2	2	1	1	0	0	0	4	4	38	1.26
Dardanelle, Arkansas	30	36	2	0	0	4	9	7	8	6	20	16	4	1	1	1	1	0	0	0	0	0	1	3	40	1.33
Wichita, Kansas	31	31	1	3	7	14	2	4	0	0	15	16	11	0	3	1	0	2	2	3	0	0	6	5	42	1.35
Cleveland, Ohio	30	30	1	12	6	5	4	2	0	0	19	11	6	0	1	0	0	2	3	0	0	0	4	2	36	1.20
Houston, Texas	30	33	1	5	8	6	6	4	3	0	15	18	13	2	2	0	1	0	4	1	1	2	4	9	46	1.53
Parkersburg West Virginia	30	30	1	5	8	10	4	2	0	0	19	11	16	1	1	1	0	2	5	5	1	0	6	10	46	1.53
TOTAL	181	190	6	25	29	43	34	26	16	11	98	92	58	4	10	5	4	7	15	9	2	2	25	33	248	1.37

[1]Intervals include 2 months before and 3 months after indicated date; e.g., the three-year-old category includes children from 34 months to 39 months, etc.

Table II-3

ASSIGNMENT OF FOCAL CHILDREN TO SITE COORDINATORS AND COMMUNITY INTERVIEWERS

Site	Number of focal children per site	Site Coordinator No.	Site Coordinator %	Interviewer 1 No.	Interviewer 1 %	Interviewer 2 No.	Interviewer 2 %	Interviewer 3 No.	Interviewer 3 %
Huntsville, Alabama	30	3	10	14	47	12	40	1	03
Dardanelle, Arkansas	36	10	28	14	39	12	33	---	
Wichita, Kansas	31	0		11	35	10	32	10	32
Cleveland, Ohio	31	9	27	9	30	12	40	1	03
Houston, Texas	33	2	06	10	30	12	36	9	27
Parkersburg, West Virginia	30	0		15	50	15	50	---	
TOTAL	190								

Table II-4

TESTING TIMES

Measure	N	Mean (Minutes)	SD	Maximum
Child Measures				
PSI	187	12.7	4.37	28
DDST	187	22.0	5.74	55
WT/HT	183	3.1	1.59	10
CDT	184	12.2	4.48	40
TOTAL CHILD TIME		50.0		
Parent Questionnaires				
SBI	179	5.4	3.97	37
HES	186	18.7	6.02	41
PI	183	18.4	6.87	59
Food Intake	178	6.9	2.93	17
TOTAL PARENT TIME		49.4		
Parent and Child				
8-Block		20.1	7.06	50
TOTAL BATTERY TIME		119.4		

CONDITIONS OF TESTING SUMMARIZED OVER ALL MEASURES

	Log 1	Logs 2 & 3	Mean
Percent of visits where mother was present	87.2	86.8	87.0
Mean number of people in room	5.4	4.9	5.1
Percent of visits where house was rated noisy	34.4	37.4	35.9
Percent of visits where testers had difficulties	30.9	19.0	24.9
	Log 1	**Logs 2 & 3**	**% of Total**
Frequency of testing in each location:			
living room	113	112	58.5
dining room	16	19	9.1
kitchen	28	30	15.1
living and dining rooms	8	7	3.9
living room and kitchen	13	18	8.0
other[1]	3	10	3.6
other and living room	1	3	1.0
Frequency of testing done on:			
large table	42	43	21.8
child-size table	16	15	8.0
floor	50	34	22.1
chair	0	2	0.5
large table and floor	19	31	13.0
large table and chair	3	4	1.8
child-size table and floor	13	14	7.0
floor and bed	2	0	0.5
floor and chair	1	1	0.5
other[2]	7	10	4.4
other and large table	2	1	0.7
other and floor	8	7	3.9
other and chair			
floor and couch	16	21	9.1
child-size table and couch	2	2	1.0
couch	2	10	3.1

[1]Examples of "other" include living room and hallway, and kitchen and hallway.

[2]Examples of "other" include large and child-size tables, child-size table and bed, and child-size table and chair.

Table II-6

REASONS FOR MISSING DATA

	Number of Completed Instruments	Number of Missing Instruments	Interviewer's Comments				
			Child Refusal	Tester Error	Uncontrollable Circumstances	Language Difficulties	Other
Child Measures							
PSI	173	17	12	0	1	2	2
DDST	182	8	4	1	0	0	3
Height & Weight	186	4	1	1	0	0	2
CDT	184	6	1	0	1	1	3
POCL[1,2]	182	0	---	---	---	---	---
Parent Questionnaires							
SBI[3]	180	1	0	0	0	0	1
H/S HES[3]	177	4	0	0	0	0	4
Parent Interview[3]	178	3	0	0	1	0	2
Food Intake[3]	170	11	1	0	7	0	3
Parent-Child Interaction							
8-Block[1,3]	169	12	4	0	3	0	5
TOTAL	1,781	66	23	2	13	3	25

[1] Includes tests not scored for the analysis of whole scores because of insufficient items.

[2] N = 182 because the POCL was completed for both focal children in one family.

[3] Possible number of completed instruments is 181 since instrument was administered for only one focal child.

Table II-7

RELIABILITY OF CODING 8-BLOCK AUDIO TAPES[1]

Category	Category Number	Event-by-Event % Agreement[2] Coder 1 & 2 Total A + D	Event-by-Event % Agreement[2] Coder 1 & 2 % A	% Agreement by Total Frequency[3] Number of Events Coded Coder 1	Number of Events Coded Coder 2	% Agreement by Total Frequency[3] % A
MOTHER						
Request Talk						
Height	1	27	81	25	24	96
Mark	2	27	59	17	26	65
Height & Mark	3	6	*	6	4	67
Unclassified	4	152	83	147	133	90
Req. Understanding						
Height	5	33	36[4]	18	27	67
Mark	6	60	63	44	54	81
Height & Mark	7	45	71	40	38	95
Unclassified	8	238	60	199	181	91
Req. Placement						
Height	9	13	69	13	11	85
Mark	10	17	59	10	16	63
Height & Mark	11	32	66	24	30	80
Unclassified	12	196	72	164	173	95
Talk About						
Height	13	72	64	60	58	97
Mark	14	89	64	75	71	95
Height & Mark	15	61	56	53	42	79
Unclassified	16	202	50	127	175	73
Future	17	7	*	4	5	80
Direct Request	18	106	46[4]	65	90	72
Respond	19	7	*	1	6	17
Comments	20	10	30[4]	6	7	86
Task Irrelevancy	21	21	62	15	19	79
Praise	22	26	69	22	22	100
Acknowledge	23	282	73	236	246	96
Encourage	24	0	*	0	0	--
Correction Alone	25	117	61	86	103	83
Correction/Reason	26	1	*	0	1	0
Height	27	8	*	1	7	14
Mark	28	9	*	7	6	86
Height & Mark	29	12	25[4]	7	8	88
Correction/Question	30	1	*	0	1	0
Height	31	4	*	3	3	100
Mark	32	1	*	1	0	0
Height & Mark	33	1	*	1	0	0
Threaten	34	0	*	0	0	--
Bribe	35	0	*	0	0	--

(Continued)

Table II-7

RELIABILITY OF CODING 8-BLOCK AUDIO TAPES[1]
(Continued)

Category	Category Number	Event-by-Event % Agreement[2] Coder 1 & 2 Total A + D	Event-by-Event % Agreement[2] Coder 1 & 2 % A	% Agreement by Total Frequency[3] Number of Events Coded Coder 1	Number of Events Coded Coder 2	% A
CHILD						
Talk About						
Height	36	102	70	79	94	84
Mark	37	132	82	120	120	100
Height & Mark	38	46	80	42	41	98
Unclassified	39	192	58	148	156	95
Direct Request	40	36	56	29	27	93
Respond	41	7	*	1	6	17
Comments	42	9	*	5	6	83
Task Irrelevancy	43	33	82	30	30	100
Acknowledge	44	1	*	1	0	0
I Don't Know	45	9	*	8	5	63
Refuse, Reject	46	6	*	5	3	60

[1]Based on sample of 16 tapes

[2]% Agreement (% A) = Number of agreements (A) divided by the total number of agreements plus disagreements (A + D), multiplied by 100.

[3]% A = Smaller number of events coded divided by larger number, times 100.

[4]Reliability too low for inclusion of this category in sequential analyses.

*Too few occurrences for calculating a reliability estimate.

Table II-8

Parental Reactions to Testing

Instrument	N	Liked %	Didn't Like %	What parent didn't like			
				Nothing Specific	Too Difficult	Insulting Intelligence	Other
Child Measures							
DDST	171	95	05	2	14	1	2
PSI	172	98	02	2	7	1	1
Height & Weight	167	99	01	1	4	1	0
CDT	168	98	02	3	6	1	0
8-Block	179	94	06	4	7	2	4
Parent Questionnaires				Too Much Time		Insulting Intelligence	
SBI	173	98	02	7		2	
Food Intake	175	98	02	6		2	
H/S HES	175	96	04	2		2	
Parent Interview	179	96	05	12		2	

KEY TO

PRESCHOOL INVENTORY ITEMS

1	What is your first name?
2	Show me your shoulder.
3	What is this (knee)?
4	What is this (elbow)?
5	Put the yellow car on the little box.
6	Put the blue car under the green box.
7	Put 2 cars behind the box in the middle.
8	If you were sick, who would you go to?
9	When do we eat breakfast?
10	If you wanted to find a lion where would you look?
11	What does a dentist do?
12	Which way does a phonograph record go?
13	Which way does a ferris wheel go?
14	How many hands do you have?
15	How many wheels does a bicycle have?
16	How many wheels does a car have?
17	How many toes do you have?
18	Which is slower, a car or a bicycle?
19	Point to the middle one.
20	Point to the first one.
21	Point to the last one.
22	Point to the second one.
23	Which of these 2 groups has less checkers in it?
24	Which of these 2 groups has more checkers in it?
25	Point to the one that is most like a tent.
26	Make one like this (square).
27	Make one like this (triangle).
28	Which one is the color of night?
29	Color the square.
30	Color the square purple.
31	Color the triangle.
32	Color the triangle orange.

Table III-1

PRESCHOOL INVENTORY
ITEM RESPONSE DISTRIBUTIONS

Item[2]	N	Response Category[1] C	W	DK	R	NR	V
1	169	88.2%	7.1%	0.6%	0.0%	4.1%	94.1%
2	171	74.3	14.6	2.9	1.8	6.4	21.6
3	171	78.4	17.0	1.8	0.0	2.9	96.5
4	171	60.8	27.5	7.0	0.0	4.7	91.2
5	171	55.0	43.9	0.6	0.6	0.0	22.2
6	171	35.1	64.3	0.0	0.0	0.6	21.6
7	171	18.1	81.9	0.0	0.0	0.0	14.6
8	170	57.1	37.1	4.1	0.6	1.2	97.6
9	171	42.7	45.0	7.0	0.0	5.3	92.4
10	170	22.9	64.1	8.2	0.0	4.7	91.2
11	171	62.6	25.1	7.0	0.0	5.3	89.5
12	169	32.0	47.9	9.5	1.8	8.9	81.1
13	171	18.1	60.2	12.3	1.8	7.6	80.7
14	171	62.0	36.3	0.0	0.6	1.2	96.5
15	171	63.7	35.1	0.0	0.0	1.2	96.5
16	170	38.2	58.2	1.8	0.0	1.8	95.9
17	171	14.0	77.8	2.9	1.2	4.1	92.4
18	171	66.1	29.8	2.3	0.6	1.2	97.1
19	171	52.6	46.8	0.0	0.0	0.6	15.8
20	170	45.9	52.9	0.0	0.0	1.2	7.1
21	170	36.5	62.9	0.0	0.0	0.6	5.9
22	169	29.0	71.0	0.0	0.0	0.0	4.1
23	169	32.5	64.5	0.6	0.0	2.4	39.1
24	170	10.0	87.1	0.6	1.2	1.2	40.6
25	171	70.2	29.8	0.0	0.0	0.0	17.0
26	168	45.8	52.4	0.0	1.8	0.0	17.3
27	168	32.7	63.1	1.8	2.4	0.0	22.0
28	170	69.4	30.6	0.0	0.0	0.0	37.1
29	171	39.2	59.6	0.0	1.2	0.0	27.5
30	171	48.5	50.3	0.0	1.2	0.0	17.5
31	171	55.0	44.4	0.0	0.6	0.0	24.6
32	171	62.0	37.4	0.0	0.6	0.0	20.5

[1]Code: C = Correct, W = Wrong, DK = Don't Know, R = Refusal, NR = No Response, V = Verbal

[2]See key to items.

Table III-2

PRESCHOOL INVENTORY: PERCENT PASSING

Item[2]	Age[1] 3 N=2-6	3-1/2 N=17-24	4 N=26-29	4-1/2 N=37-42	5 N=31-34	5-1/2 N=26	6 N=15-16	6-1/2 N=9-10	All Ages N=169-18
1	83%	79%	90%	85%	82%	85%	100%	100%	86%
2	33	58	55	67	79	81	88	100	71
3	33	50	62	69	85	89	88	100	73
4	17	25	46	51	71	69	75	100	57
5	17	39	31	45	56	73	88	70	52
6	17	17	17	26	35	50	50	60	32
7	0	0	03	14	27	19	44	30	17
8	17	35	41	42	64	62	88	90	53
9	17	13	31	37	41	54	69	60	40
10	0	13	07	22	18	27	40	60	21
11	0	39	38	51	79	77	75	80	58
12	0	22	22	39	28	35	44	30	31
13	0	14	04	05	21	46	25	30	18
14	33	64	56	58	55	73	75	60	61
15	0	50	52	63	61	81	69	90	63
16	0	24	41	32	39	46	47	50	38
17	0	0	04	14	12	27	31	20	14
18	100	43	44	70	73	73	75	90	66
19	33	16	33	50	64	65	81	80	53
20	67	28	57	34	33	58	81	100	46
21	0	33	15	29	39	42	56	80	36
22	0	41	15	26	30	27	38	50	29
23	0	43	30	42	38	19	31	10	33
24	0	0	07	08	12	12	25	10	10
25	67	70	56	61	70	77	94	80	69
26	67	16	27	32	58	58	75	80	46
27	0	05	12	32	41	39	69	56	33
28	67	70	65	61	67	85	81	60	69
29	33	20	22	34	55	39	63	50	39
30	0	25	33	53	64	50	56	70	49
31	33	40	37	40	70	69	75	70	54
32	33	40	56	53	73	73	63	90	61

[1]Intervals include two months before and three months after indicated age (e.g., the three-year-old category includes children from 34 months to 39 months, etc.). The N for each item varies because of missing data.

[2]See key to items.

Table III-3

PRESCHOOL INVENTORY
INTERITEM[1] AND ITEM-TOTAL[2] CORRELATIONS

(Item Ns range from 168 to 171)

Item[3]	TOTAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	03																															
2	42	-05																														
3	34	03	37																													
4	50	-07	29	51																												
5	53	08	25	24	24																											
6	54	08	29	21	29	39																										
7	45	-11	21	14	25	24	32																									
8	35	- 0	19	20	25	25	27	19																								
9	40	13	21	20	28	35	33	18	25																							
10	46	07	16	19	30	27	28	21	19	29																						
11	47	-02	15	27	32	39	29	24	23	23	34																					
12	28	01	20	-04	11	11	24	17	14	21	29	19																				
13	40	03	17	17	35	18	23	25	07	27	21	27	07																			
14	32	-10	09	-03	14	28	25	21	20	21	20	12	15	18																		
15	23	-04	08	08	07	27	20	07	23	21	20	07	09	13	16																	
16	43	06	27	18	24	16	29	29	-02	20	26	34	16	32	05	03																
17	35	-06	24	13	12	16	23	16	04	09	15	14	08	20	07	09	36															
18	26	-07	17	10	21	15	14	08	13	12	25	11	07	21	10	05	16	18														
19	68	-01	38	30	39	37	45	32	31	25	30	33	28	29	25	14	31	21	24													
20	41	12	19	11	18	23	30	24	25	27	20	16	08	18	17	10	17	24	10	37												
21	38	05	17	16	28	17	22	24	25	03	20	16	14	15	19	11	20	18	05	47	14											
22	03	11	-08	-10	02	12	-06	0	07	-03	14	06	04	-07	02	04	-04	0	6	-05	-09	19										
23	-04	-06	04	-03	-13	09	04	13	-04	-01	-04	0	-01	-04	-09	09	02	01	02	-01	-09	-10	01									
24	25	-01	15	18	06	14	21	25	05	15	05	17	-02	10	02	05	18	09	03	20	12	-05	-04	14								
25	18	-11	11	03	08	08	05	17	03	-01	20	21	-03	17	04	01	09	15	15	15	14	15	01	-12	04							
26	49	08	22	14	30	18	26	29	15	14	22	22	30	26	21	01	28	09	24	40	22	23	12	-11	15	04						
27	46	02	13	13	30	18	27	32	08	16	21	12	20	20	17	05	22	15	11	39	33	18	03	-13	20	16	55					
28	29	-05	22	08	20	19	16	21	09	10	-01	17	14	15	19	-03	14	01	01	29	22	14	-02	-07	17	12	14	30				
29	43	07	14	10	23	22	26	24	13	13	14	25	05	21	33	03	29	26	07	31	11	15	05	07	21	10	25	32	19			
30	43	03	14	11	18	29	27	27	10	18	15	20	12	09	16	12	28	21	08	34	19	26	-03	03	18	10	28	23	10	25		
31	33	11	19	21	24	22	12	-03	07	02	13	25	08	09	-05	03	18	26	05	25	15	08	08	-08	18	08	28	22	06	34	27	
32	34	05	15	09	16	24	12	09	12	12	17	12	10	12	18	11	07	21	05	39	23	13	-12	01	06	04	21	21	16	18	35	28

[1] A missing data intercorrelation computer program was used.

[2] The item-total correlations are corrected for overlap; in other words, each item is correlated with the total of all the other items, excluding itself.

[3] See key to items.

Table III-4

PRESCHOOL INVENTORY
ROTATED FACTOR LOADINGS[1]
TEN FACTORS EXTRACTED

(Item Ns range from 168 to 171)

Item[2]	FI	FII	FIII	FIV	FV	FVI	FVII	FVIII	FIX	FX
1	07	06	03	08	-05	02	11	-75	-06	-10
2	16	11	-12	-17	54	-02	-19	10	-25	20
3	05	10	-02	-04	83	10	-05	-06	07	02
4	05	13	-19	21	67	31	07	06	-12	05
5	24	61	-14	-15	19	19	16	-10	04	02
6	15	42	-23	-19	19	23	-09	-08	-29	09
7	01	18	-48	-31	07	24	05	26	-22	16
8	01	58	-16	08	31	-19	15	06	-08	04
9	-09	54	-10	-03	15	31	-22	-32	-16	04
10	04	37	02	08	12	27	20	-14	-26	42
11	09	25	-12	-10	34	44	25	-03	05	14
12	03	13	-07	-01	-01	05	03	-02	-74	05
13	00	12	-14	12	16	62	-16	00	-05	24
14	13	47	-26	26	-21	36	01	29	-13	-17
15	12	61	16	-08	-03	-01	00	06	-04	09
16	23	-12	-05	-21	18	56	-07	-06	-28	26
17	53	01	11	-10	04	23	-12	08	-04	45
18	-02	08	03	-01	12	11	04	04	-18	57
19	39	29	-37	02	36	07	-01	11	-32	16
20	20	32	-47	08	03	-10	-27	-28	-03	35
21	28	17	-14	23	23	-02	35	29	-28	10
22	-06	07	03	-01	-09	-04	82	-11	-07	08
23	03	12	17	-74	-08	-04	01	16	-05	-07
24	09	02	-42	-58	14	10	-01	-16	16	00
25	06	01	-28	12	-03	09	13	20	33	63
26	21	-07	-42	07	15	17	21	-17	-52	10
27	21	-05	-66	07	04	14	06	-15	-27	13
28	04	06	-65	03	14	06	-08	13	01	-11
29	44	07	-28	-09	01	53	19	03	06	-14
30	60	16	-16	-13	04	11	03	03	-16	01
31	63	-11	-04	00	31	08	21	-31	09	04
32	68	22	-12	14	04	-07	-19	-02	-06	-03
PCT. V	07	08	07	04	07	06	04	04	05	05

Ten factors accounted for 58.34% of the total variance.

[1]Principal components factor analysis followed by a varimax rotation.

[2]See key to items.

Table III-5

PRESCHOOL INVENTORY
ITEMS LOADING HIGHEST ON EACH FACTOR

(Item Ns range from 168 to 171)

		Loading
FACTOR I	(7.1%)	
32.	Color the triangle orange.	.68
31.	Color the triangle.	.63
30.	Color the square purple.	.60
17.	How many toes do you have?	.53*
29.	Color the square.	.44*
19.	Point to the middle one.	.39*
FACTOR II	(7.6%)	
5.	Put the yellow car on the little box.	.61
15.	How many wheels does a bicycle have?	.61
8.	If you were sick, who would you go to?	.58
9.	When do we eat breakfast?	.54*
14.	How many hands to you have?	.47*
6.	Put the blue car under the green box.	.42
10.	If you wanted to find a lion, where would you look?	.37*
FACTOR III	(7.4%)	
27.	Make one like this (triangle).	-.66
28.	Which one is the color of night?	-.65
7.	Put 2 cars behind the box in the middle.	-.48
20.	Point to the first one.	-.47*
24.	Which of these 2 groups has more checkers in it?	-.42*
26.	Make one like this.	-.42*
19.	Point to the middle one.	-.37*
FACTOR IV	(4.4%)	
23.	Which of these 2 groups has less checkers in it?	-.74
24.	Which of these 2 groups has more checkers in it?	-.58*
FACTOR V	(7.0%)	
3.	What is this (knee)?	.83
4.	What is this (elbow)?	.67
2.	Show me your shoulder.	.54
19.	Point to the middle one.	.36*
11.	What does a dentist do?	.34*

(Continued)

Table III-5

PRESCHOOL INVENTORY
ITEMS LOADING HIGHEST ON EACH FACTOR

(Item Ns range from 168 to 171)

(Continued)

		Loading
FACTOR VI	(6.0%)	
13.	Which way does a ferris wheel go?----------	.62
16.	How many wheels does a car have?----------	.56
29.	Color the square.----------	.53*
11.	What does a dentist do?----------	.44*
14.	How many hands do you have?----------	.36*
9.	When do we eat breakfast?----------	.31*
FACTOR VII	(4.3%)	
22.	Point to the second one.----------	.82
21.	Point to the last one.----------	.35
FACTOR VIII	(4.2%)	
1.	What is your first name?----------	-.75
9.	When do we eat breakfast?----------	-.32*
FACTOR IX	(5.3%)	
12.	Which way does a phonograph go?----------	-.74
26.	Make one like this (square).----------	-.52*
25.	Point to the one that is most like a tent.---	.33*
19.	Point to the middle one.----------	-.32*
FACTOR X	(5.0%)	
25.	Point to the one that is most like a tent.---	.63*
18.	Which is slower, a car or a bicycle?---------	.57
17.	How many toes do you have?----------	.45*
10.	If you wanted to find a lion where would you look?----------	.42*
20.	Point to the first one.----------	.35*

Ten factors accounted for 58.3% of the total variance.

---

*Item also shows substantial loading on another factor.

Table III-6

N ≈ 100

FALL-SPRING STABILITY AND CHANGE IN PSI ITEM RESPONSES

	Item	Frequencies per Cell: Pass fall Pass spr. (+ +)	Pass fall Fail spr. (+ −)	Fail fall Pass spr. (− +)	Fail fall Fail spr. (− −)	Percent Passing: Fall	Spring	Difference F − S	Chi-square
1.	First name	52	3	32	13	.55	.84	.29	24.03*
2	Shoulder	44	10	32	14	.54	.76	.22	11.52*
3.	Knee	48	3	31	18	.51	.79	.28	23.06*
25.	Tent	39	19	24	18	.58	.63	.05	.58
18.	Car or bike	30	23	27	20	.53	.57	.04	.32
28.	Color of night	32	12	30	26	.44	.62	.18	7.71*
15.	Bicycle wheels	35	14	23	28	.49	.58	.09	2.19
31.	Color triangle	31	23	18	28	.54	.49	−.05	.61
32.	Color triangle orange	39	9	24	28	.48	.63	.15	6.82*
11.	Dentist	27	6	37	30	.33	.64	.31	22.35*
14.	Hands	38	15	14	33	.53	.52	−.01	.03
8.	Sick	35	14	17	34	.49	.52	.03	.29
5.	Yellow car on little box	27	11	27	35	.38	.54	.16	6.74*
4.	Elbow	35	2	24	39	.37	.59	.22	18.62*
19.	Point: middle	26	9	26	39	.35	.52	.17	8.26*
23.	Less checkers	10	28	22	40	.38	.32	−.06	.72
20.	Point: first	24	13	19	44	.37	.43	.06	1.12
30.	Color square purple	12	8	34	46	.20	.46	.26	16.10*
21.	Point: last	11	16	26	47	.27	.37	.10	2.38
9.	Breakfast	21	7	23	49	.28	.44*	.16	8.53*
16.	Car wheels	14	8	29	49	.22	.43	.21	11.92*
26.	Draw square	21	7	21	51	.28	.42	.14	7.00*
29.	Color square	9	15	23	53	.24	.32	.08	1.68
22.	Point: second	6	18	18	58	.24	.24	.00	.00
6.	Blue car under green box	16	8	16	60	.24	.32	.08	2.67
12.	Phonograph record	13	8	19	60	.21	.32	.11	4.48*
27.	Draw triangle	11	9	19	61	.20	.30	.10	3.57
10.	Lion	9	12	12	67	.21	.21	.00	.00
13.	Ferris wheel	10	6	10	74	.16	.20	.04	1.00
17.	Toes	1	5	16	78	.06	.17	.11	5.76*
7.	2 cars behind middle box	3	5	13	79	.08	.16	.08	3.56
24.	Equal checkers	0	5	9	86	.05	.09	.04	1.14

* $p < .05$

KEY TO

DENVER DEVELOPMENTAL SCREENING TEST

Fine Motor Items

1-d	Dumps raisin from bottle - demonstrated
1-s	Dumps raisin from bottle - spontaneously
2	Builds tower of 8 blocks
3	Imitates bridge
4	Picks longer line
5	Draws vertical line
6	Copies circle
7	Copies cross
8-3	Draws girl or boy - 3 parts
8-6	Draws girl or boy - 6 parts

Language Items

9	Uses plural
10	Comprehends hungry, cold, tired
11	Comprehends prepositions
12	Recognizes colors
13	Opposite analogies
14	Composition of (_____)
15	Defines words

Gross Motor Items

16-1	Balances on one foot 1 second
16-5	Balances on one foot 5 seconds
16-10	Balances on one foot 10 seconds
16-1, 5 & 10	Score for balance item in which 1 = failure 2 = pass for 1 second 3 = pass for 5 seconds 4 = pass for 10 seconds
17	Jumps in place
18	Broad jump
19	Hops on one foot
20	Heel-to-toe walk
21	Backward heel-to-toe
22	Catches bounced ball

Personal-Social Items

23	Plays interactive games
24	Separates from mother easily
25	Washes and dries hands
26	Puts on clothing
27	Buttons up
28 & 29	Dresses with supervision
30	Dresses without supervision

Table III-7

DENVER DEVELOPMENTAL SCREENING TEST
ITEM RESPONSE DISTRIBUTIONS

Item[1]	N	Response Category[2] Pass	Fail	Refuse	No Response
Fine Motor					
1-d	161	98.0%	0.0%	.6%	.6%
1-s	161	85.7	14.3	0.0	0.0
2	187	85.0	15.0	0.0	0.0
3	187	84.0	16.0	0.0	0.0
4	187	61.5	36.9	1.6	---
5	187	95.2	4.8	0.0	0.0
6	187	65.2	34.2	.5	0.0
7	187	63.1	36.9	0.0	0.0
8-3	187	45.5	51.9	2.7	0.0
8-6	187	18.2	79.1	2.7	0.0
Language					
9	186	48.9	25.8	1.1	24.2
10 Hungry	186	71.5	17.2	.5	10.8
Cold	186	63.4	29.0	0.0	7.5
Tired	185	68.1	23.8	.5	7.6
11 On	186	97.3	2.2	0.0	.5
Under	186	88.2	10.0	0.0	1.1
Behind	186	65.1	32.8	1.1	1.1
In front of	186	66.1	31.7	1.1	1.1
12 Red	186	71.0	28.0	.5	.5
Green	186	64.5	34.4	.5	.5
Yellow	186	66.1	32.8	.5	.5
Blue	186	65.1	33.9	.5	.5
13 Fire	186	54.8	31.2	1.6	12.4
Horse	187	62.6	29.9	1.1	6.4
Mother	187	31.6	58.3	1.6	8.6
14 Door	187	36.9	55.6	1.1	6.4
Spoon	186	27.4	66.1	1.1	5.4
Shoe	186	18.3	74.7	.5	6.5
15 Ball	187	42.2	49.7	1.1	7.0
Lake	186	26.9	64.5	1.1	7.5
Desk	186	25.8	61.8	1.1	11.3
House	186	33.3	58.6	1.6	6.5
Banana	184	48.4	47.3	.5	3.8
Curtain	184	25.5	66.8	0.0	7.6
Ceiling	183	11.5	78.7	.5	9.3
Hedge	183	1.6	89.6	1.1	7.7
Pavement	183	7.1	83.1	1.1	8.7

(Continued)

Table III-7

DENVER DEVELOPMENTAL SCREENING TEST
RESPONSE DISTRIBUTIONS

(Continued)

Item[1]	N	Response Category[2] Pass	Fail	Refuse	No Response
Gross Motor					
16-1	187	88.8%	5.9%	5.3%	---
16-5	187	34.2	60.4	5.3	---
16-10	187	18.7	22.5	5.3	---
17	186	90.3	2.2	5.4	2.2%
18	185	82.7	12.4	3.8	1.1
19	185	80.0	9.7	7.0	3.2
20	187	13.4	80.2	6.4	---
21	187	7.0	84.5	8.6	---
22	187	39.0	61.0	0.0	0.0
Personal-Social					
	N	Yes	No	Sometimes	
23	187	80.2%	12.8%	7.0	
	N	Doesn't Mind	Gets Upset		
24	186	86.0%	14.0%		
	N	Yes	No		
25	187	99.5%	.5%		
26	187	97.9	2.1		
27	186	73.7	26.3		
28 & 29	187	79.5	20.5		
30	185	84.3	15.7		

[1] See key to items.

[2] For items 4, 16, 20, and 21 three responses were required. Two out of three successful responses constituted a pass; less than that a failure. If there were two or three refusals or no responses, a refusal for the entire item was scored.

Table III-8

DENVER DEVELOPMENTAL SCREENING TEST PERCENT PASSING

Item[2]	Age[1] 3 N=3-6	3½ N=19-25	4 N=26-29	4½ N=36-43	5 N=27-34	5½ N=23-26	6 N=12-16	6½ N=6-11	All Ages 138-188
Fine Motor									
1-d	100 %	95 %	100 %	100 %	96 %	100 %	100 %	100 %	98 %
1-s	60	88	96	72	82	91	100	100	86
2	50	76	83	79	91	89	100	82	84
3	33	60	86	83	94	92	94	100	84
4	40	46	52	52	77	81	75	55	62
5	83	88	93	95	97	100	100	100	95
6	17	44	38	62	91	81	81	89	65
7	00	24	31	60	88	92	94	100	63
8-3	00	20	17	45	56	73	56	100	46
8-6	00	08	03	17	27	27	19	56	18
Language									
9	33	29	25	43	67	62	69	89	50
10	50	71	65	69	82	92	88	82	76
11	67	87	57	71	64	85	75	82	72
12	50	38	28	54	70	62	75	55	53
13	20	26	43	53	56	68	93	82	55
14	00	05	07	19	45	64	64	55	32
15	00	00	00	07	16	09	20	09	08
Gross Motor									
16-1	50	80	97	88	91	92	88	73	87
16-5	00	12	24	26	35	50	63	73	34
16-10	00	05	07	10	18	31	56	46	19
17	33	75	97	93	97	92	94	100	90
18	20	79	79	91	82	81	94	89	83
19	20	75	69	79	91	77	100	100	80
20	00	04	07	08	31	13	19	27	14
21	00	05	00	08	03	04	25	27	08
22	00	16	28	30	59	42	56	73	38
Personal-Social									
23	100	80	83	81	94	92	88	100	87
24	67	72	90	91	85	89	87	100	86
25	100	100	97	100	100	100	100	100	100
26	83	100	97	95	100	100	100	100	98
27	17	56	76	76	91	81	63	78	74
28 + 29	67	76	83	74	79	92	88	64	80
30	33	72	83	83	94	92	88	100	84

[1]The N for each item varies because of missing data.

[2]See key to items.

DENVER DEVELOPMENTAL SCREENING TEST
INTERITEM[1] AND ITEM-SUBTOTAL[2] CORRELATIONS

(Item Ns range from 161 to 190)

Items	1-s	2	3	4	5	6	7	8-3	Sub-total	9	10	11	12	13	14	15	Sub-total	16-1.5&10	17	18	19	20	21	22	Sub-total	27	24	25	26	27	28&29	30
Fine Motor																																
1-s																																
2	16																															
3	03	22																														
4	09	18	33																													
5	13	19	24	11																												
6	02	13	29	28	26																											
7	15	18	36	31	24	49																										
8-3	07	14	22	22	21	44	54																									
Subtotal	14	25	40	35	32	49	60	48																								
Language																																
9	01	12	16	33	16	12	29	20	29																							
10	20	12	21	27	34	18	34	21	38	23																						
11	07	09	16	18	24	06	17	15	20	16	23																					
12	12	20	32	41	25	33	42	28	48	23	25	28																				
13	16	14	21	26	22	25	40	36	42	30	27	28	37																			
14	19	15	21	37	13	24	42	21	40	30	21	29	39	39																		
15	03	07	13	20	06	22	22	23	26	13	11	17	23	26	34																	
Subtotal	20	24	39	51	34	35	56	39	56	36	37	36	50	54	53	32																
Gross Motor																																
16-1.5&10	-13	-14	-18	-26	-10	-12	-31	-24	30	-19	-16	-04	-16	-25	-23	-11	24															
17	11	12	16	07	11	15	32	23	28	07	13	04	14	11	11	09	21	-23														
18	02	10	13	05	-02	03	25	16	19	10	11	06	12	09	08	-05	12	-22	45													
19	15	03	20	20	33	27	44	30	42	21	39	05	27	27	19	14	41	-30	54	41												
20	14	17	08	17	09	12	20	14	23	16	15	13	24	13	29	00	27	-12	06	03	14											
21	02	12	00	13	06	15	16	07	15	10	11	13	21	12	23	15	25	-06	09	07	13	27										
22	06	09	14	23	08	22	27	26	30	10	26	19	20	13	12	07	26	-25	15	11	27	10	-01									
Subtotal	15	15	17	32	17	20	43	32	44	28	28	10	29	29	27	11	38	73	35	41	60	39	30	51								
Personal-Social																																
23	-01	06	05	05	14	02	10	00	07	14	13	07	-02	06	11	-15	15	-07	-01	00	06	12	05	11	15							
24	04	18	29	05	-02	09	17	06	19	-13	00	-06	12	-02	06	-08	04	02	18	23	07	02	04	01	07	03						
25	-03	-03	-03	10	-02	10	10	07	04	-07	14	-04	08	09	05	02	04	-03	-02	-03	15	03	02	06	08	-03	-03					
26	05	15	14	08	14	12	12	06	16	15	01	25	09	18	11	05	17	-11	08	23	11	05	04	04	12	05	05	-01				
27	10	12	24	07	26	18	32	10	28	13	19	14	07	15	22	08	23	-06	14	03	11	12	07	05	08	02	00	-04	08			
28 & 29	06	09	23	17	08	-04	08	04	11	-01	27	13	15	20	21	05	23	-15	02	00	00	01	05	08	04	14	04	-04	12	08		
30	02	19	29	29	18	12	32	21	36	13	23	29	23	15	24	12	35	-12	28	22	10	17	12	07	17	14	25	-03	24	29	32	
Subtotal	08	21	39	22	23	14	37	15	36	10	28	22	19	22	31	00	30	15	22	19	14	15	10	11	21	11	10	-07	18	16	24	48

Table III-10

DENVER DEVELOPMENTAL SCREENING TEST
ROTATED FACTOR LOADINGS[1]
TEN FACTORS EXTRACTED

(Item Ns range from 161 to 190)

Item[2]	FI	FII	FIII	FIV	FV	FVI	FVII	FVIII	FIX	FX	h^2
Fine Motor											
1-s	04	-08	-02	09	08	12	00	-01	-84	-06	74
2	22	05	43	-10	14	05	-17	20	-43	06	52
3	43	-03	49	-01	-12	27	-10	06	02	-24	58
4	64	05	11	-04	16	-10	02	03	-02	-28	54
5	16	-02	-01	-15	-03	69	10	26	-20	03	64
6	57	-01	25	09	08	35	17	01	14	30	66
7	62	-33	17	03	17	35	03	-01	02	00	67
8-3	61	-21	10	10	-03	22	07	04	05	16	52
Language											
9	50	-07	-30	-22	20	07	-38	16	09	02	61
10	28	-17	-14	-18	06	40	35	03	-21	-38	63
11	16	05	-11	06	15	19	05	65	-02	-24	59
12	54	-01	19	14	29	06	18	20	-11	-11	53
13	53	-07	-15	15	11	14	03	27	-14	-15	48
14	47	-03	-03	16	46	07	-11	08	-10	-29	59
15	38	00	-15	62	13	08	-05	06	08	-14	61
Gross Motor											
16-1,5&10	-50	35	11	12	07	17	15	06	24	16	53
17	08	-80	13	08	05	13	-05	-03	-04	-04	69
18	04	-77	17	-06	02	-15	-07	22	03	00	70
19	32	-70	-11	-06	06	24	25	00	-11	04	75
20	17	-01	06	-25	66	04	01	02	-21	07	58
21	03	-10	01	08	75	02	08	05	07	-01	60
22	47	-16	-04	-27	-16	-02	24	03	-09	-05	42
Personal-Social											
23	08	04	-03	-72	14	12	-06	03	11	-16	61
24	-02	-19	78	-02	05	-06	04	-05	-01	-07	67
25	11	00	-03	02	08	-07	75	-02	07	01	60
26	06	-15	11	-05	-04	-02	-09	80	00	03	69
27	04	-08	06	06	14	70	-26	-04	01	-14	61
28 & 29	09	04	09	-05	-06	03	03	07	-06	-80	68
30	12	-23	36	-04	20	24	-12	27	17	-49	65
PCT. V	13	8	5	4	6	6	4	5	4	5	

Ten factors accounted for 61.0% of the total variance.

[1]Principal Components factor analysis followed by a varimax rotation.

[2]Refer key to items.

Table III-11

DENVER DEVELOPMENTAL SCREENING TEST
ITEMS LOADING HIGHEST ON EACH FACTOR

(Item Ns range from 161 to 190)

		Loading
FACTOR I	(12.7%)	
4.	Picks longer line	.64
7.	Copies cross	.62
8-3.	Draws girl or boy - 3 parts	.61
6.	Copies circle	.57*
12.	Recognizes colors	.54
13.	Opposite analogies	.53
9	Uses plural	.50*
16-1, 5&10	Total time balances on one foot	-.50*
14.	Composition of (_____)	.47*
22.	Catches bounced ball	.47
3.	Imitates bridge	.43*
15.	Defines words	.38*
19.	Hops on one foot	.32*
FACTOR II	(7.6%)	
17.	Jumps in place	-.80*
18.	Broad jump	-.77*
19.	Hops on one foot	-.70*
16-1, 5&10	Total time balances on one foot	.35*
7.	Copies cross	-.33*
FACTOR III	(5.5%)	
24.	Separates from mother easily	.78
3.	Imitates bridge	.49*
2.	Builds tower of 8 blocks	.43*
30.	Dresses without supervision	.36*
FACTOR IV	(4.5%)	
23.	Plays interactive games	-.72*
15.	Defines words	.62*
FACTOR V	(5.6%)	
21.	Backward heel-to-toe	.75
20.	Heel-to-toe walk	.66
14.	Composition of (_____)	.46*

(Continued)

Table III-11

DENVER DEVELOPMENTAL SCREENING TEST
ITEMS LOADING HIGHEST ON EACH FACTOR

(Item Ns range from 161 to 190)

(Continued)

		Loading
FACTOR VI	(6.2%)	
27.	Buttons up	.70
5.	Draws vertical line	.69*
10.	Comprehends hungry, cold, tired	.40*
6.	Copies circle	.35*
7.	Copies cross	.35*
FACTOR VII	(4.2%)	
25.	Washes and dries hands	.75
9.	Uses plural	-.38*
10.	Comprehends hundry, cold, tired	.35*
FACTOR VIII	(5.1%)	
26.	Puts on clothing	.80
11.	Comprehends prepositions	.65
FACTOR IX	(4.2%)	
1-s&d.	Dumps raisin from bottle - demonstrated Dumps raisin from bottle - spontaneously	-.84
2	Builds tower of 8 blocks	-.43*
FACTOR X	(5.4%)	
28&28.	Dresses with supervision	-.80
30.	Dresses without supervision	-.49*
10.	Comprehends hundry, cold, tired	-.38*

Ten factors accounted for 61.0% of the total variance.

*Item also shows substantial loading on another factor.

Table III-12

FALL-SPRING STABILITY AND CHANGE IN DDST ITEM RESPONSES

Item	Frequencies per Cell				Percent Passing			
	Pass fall Pass spr. (+ +)	Pass fall Fail spr. (+ -)	Fail fall Pass spr. (- +)	Fail fall Fail spr. (- -)	Fall	Spring	Difference F - S	Chi-square
Fine Motor								
1. Draws vertical lines	65	3	28	4	.68	.93	.25	20.16*
2. Dumps raisin-demo.	66	29	4	1	.95	.70	-.25	18.94*
3. Dumps raisin-spon.	11	71	2	16	.82	.13	-.69	65.22*
4. Imitates bridge	70	4	17	9	.74	.87	.13	8.05*
5. Builds tower	75	11	11	3	.86	.86	.00	.00
6. Picks longer line	30	11	33	26	.41	.63	.22	11.00*
7. Copies circle	47	14	19	20	.61	.66	.05	.76
8. Copies cross	52	5	16	27	.57	.68	.11	5.76*
9. Draws boy or girl-3 parts	38	12	13	37	.50	.51	.01	.04
10. Draws boy or girl-6 parts	12	7	10	71	.19	.22	.03	.53
Language								
1. Plurals	49	31	6	14	.80	.55	-.25	16.89*
2. Cold, tired, hungry	43	4	28	25	.47	.71	.24	18.00*
3. Prepositions	54	11	21	14	.65	.75	.10	3.12
4. Colors	36	5	21	38	.41	.57	.16	9.85*
5. Opposites	31	5	21	43	.36	.52	.16	9.85*
6. Composition of	12	1	20	67	.13	.32	.19	17.19*
Gross Motor								
1. Balances - 1 sec.	80	5	5	0	.94	.94	.00	.00
2. Balances - 5 sec.	15	20	22	33	.39	.41	.02	.10
3. Balances - 10 sec.	5	10	16	69	.15	.21	.06	1.38
4. Jumps in place	83	3	9	5	.86	.92	.06	3.00
5. Jumps over paper	74	10	10	6	.84	.84	.00	.00
6. Hops	60	5	25	10	.65	.85	.20	13.33*
7. Heel to toe walk-frontwards	7	16	11	66	.23	.18	-.05	.93
8. Catches ball	21	6	30	43	.27	.51	.24	16.00*
9. Backward walk	3	14	5	78	.17	.08	-.09	4.26*

Table III-12

FALL-SPRING STABILITY AND CHANGE IN DDST ITEM RESPONSES

(Continued)

Item	Frequencies per Cell: Pass fall Pass spr. (+ +)	Pass fall Fail spr. (+ -)	Fail fall Pass spr. (- +)	Fail fall Fail spr. (- -)	Percent Passing: Fall	Spring	Difference F - S	Chi-square
Personal - Social								
1. Interactive games	78	6	9	7	.84	.87	.03	.60
2. Separates easily from mother	62	9	18	11	.71	.80	.09	3.00
3. Washes and dries hands	93	3	4	0	.96	.97	.01	.17
4. Puts on clothing	94	5	1	0	.99	.95	-.04	2.67
5. Buttons up	55	12	17	16	.67	.72	.05	.86
6. Dresses with supervision	54	13	24	9	.67	.78	.11	3.27
7. Dresses without supervision	68	10	13	9	.78	.81	.03	.39

* $p < .05$

Table III-13

CONCEPT DEVELOPMENT TEST
ITEM RESPONSE DISTRIBUTION
OPERATION OR JUDGMENT ITEMS

(Item Ns range from 168 to 186)

Items	Scoring Categories				
	C	W	DK	R	NR
1. One-to-one matching[3]	18.6%	80.8%	---	0.0%	0.6%
2. Number conservation-matched rows[3]	51.8	42.3	---	1.2	4.8
Child counted: yes = 9.5 no = 89.9 R = 0.6					
3. Number conservation-collapsed row[3]	7.1	88.0[1]	0.5%	0.5	3.8
Child counted: yes = 12.0 no = 88.0					

	Correct Order		Wrong Order	R	NR
	Trial & Error	No Trial & Error			
4. Seriation-3 dolls[3]	7.5%	34.9%	57.0%	0.0%	0.5
Seriation-4 dolls	1.1	14.5	27.9	0.0	12.7
Seriation-5 dolls	1.6	3.2	11.3	0.0	86.0
Seriation-7 dolls	1.6	2.2	1.1	0.0	97.3

	Color	Size	Other	R	NR
5. Classification-first grouping[3]	41.3%	38.6%	19.6%	0.0%	0.5
6. Classification-regrouping	34.1	26.9	34.1	3.8	1.1

First attempt at regrouping, child classified blocks the same way: 45.2
First attempt at regrouping, child classified blocks a different way: 54.8

	C	W	R	NR
7. Little red block[3]	74.1%	24.3%	0.5%	1.1%
8. Big blue block[3]	74.1	24.9	0.5	0.5
9. Big red block[3]	74.6	23.8	0.5	1.1
10. Little blue block[3]	73.5	24.3	1.1	1.1

[1]Breakdown of Wrong responses: "move red" = 31%; "move black" = 69%.

[2]The large percent NR is due to the fact that if a child failed a seriation item, the subsequent ones were not administered.

[3]Item used to make up CDT Scale scores.

Table III-14

CONCEPT DEVELOPMENT TEST
PERCENT RESPONSES FOR EACH CATEGORY
EXPLANATIONS

(Item Ns range from 161 to 181)

Item	Categories[1]								
	Adequate			Inadequate					
	Symbolic	Number	Matching	Perceptual	Limited Verbal	Magical	DK	R	NR
2. Conservation-matched rows	1.7%	6.2%	4.5%	15.8%	31.1%	8.5%	11.3%	2.3%	18.6%
3. Conservation-collapsed rows	2.2	6.6	0.6	21.0	32.6	11.6	9.4	1.7	14.4

	Seriation Response							
	Imaginative	Perceptual	Limited Verbal	Task Irrelevant	DK	R	NR	
4. Seriation-3 dolls	2.8%	3.9%	5.0%	42.8%	3.3%	11.1%	2.8%	28.3%
Seriation-4 dolls	3.3	2.8	2.8	17.8	0.0	3.2	1.1	69.0[2]
Seriation-5 dolls	0.6	1.1	1.1	7.2	0.0	2.2	0.6	87.2[2]
Seriation-7 dolls	0.6	0.6	0.6	2.8	0.0	0.0	0.0	95.4[2]

	Correct	Wrong	Equivalence	Limited Verbal	DK	R	NR
5. Classification-First Grouping							
Response for one group	35.6%	15.6%	12.8%	14.4%	7.2%	1.1%	13.3%
Response for other group	37.4	17.8	12.6	13.8	5.7	0.6	12.1
Classification-Regrouping							
Response for one group	28.1	29.3	6.6	11.4	6.0	2.4	16.2
Response for other group	31.7	24.8	6.8	11.2	4.3	1.9	19.3

[1]For definitions of categories see key.

[2]Large percent NR due to fact that if child failed a seriation item, the subsequent ones were not administered.

Table III-15

CATEGORIES USED IN SCORING CONSERVATION EXPLANATIONS[1]

Symbolic. Responses which indicate that the child "could tell" from what the tester did:

"I saw you put them there"
"You moved them"
"You didn't put enough there"

Number. Responses that show that the child counted:

"Because I counted them"
"There's 10 here and 12 there"

Not tester checking that child counted.

Matching. Responses that show the child has matched up the checkers

"I put mine right next to yours"

Perceptual. These responses indicate that the child looked and could tell from the length of the rows alone:

"'cause they're the same"
"Because one is longer"
"Because yours has more"

Limited verbal. These are very brief reasons which show limited verbalization by the child:

"Because", "Because I can tell",
"Nobody told me", "I just know"

Magical. These responses are primarily unrelated, made-up reasons:

"My mother told me"
"Jesus says so"
"Because black is not like that"

(Continued)

Table III-15

CATEGORIES USED IN SCORING CONSERVATION EXPLANATIONS[1]

(Continued)

Refusal. The child refused to respond. Responses such as:

"I don't want to tell you"

or the tester wrote "R".

Don't know. The child says he doesn't know:

"I don't know", "I forget"

or the tester wrote "DK".

No Response. The tester wrote "NR", or there is nothing written even though the child completed the preceding item. Nonverbal responses.

[1]Adapted from Rothenberg (1969).

Table III-16

CATEGORIES USED IN SCORING SERIATION EXPLANATIONS

Imaginative. "Because they're brothers", "So they can watch TV"

Seriation response. Any responses indicating the child perceives the seriated order of the dolls:

"Because the biggest one is at this end"
"Because that's the daddy, that's the mommy and that's the baby"

Perceptual. "Because they look right"

Limited verbal. Brief reasons indicating limited verbalization:

"To set down", "Because"

Refusal. The child refused to respond. Responses such as:

"I don't want to tell you"

or the tester wrote "R".

Don't know. The child says he doesn't know:

"I don't know", "I forget"

or the tester wrote "DK".

No Response. The tester wrote "NR", or there is nothing written even though the child completed the preceding item. Nonverbal responses.

Table III-17

CATEGORIES USED IN SCORING CLASSIFICATION EXPLANATIONS

Correct answer. If child put 2 reds together and 2 blues together, explanations such as "they're both blue" or "they're both red" are correct. If child put 2 big ones together and 2 small ones together, "they're both big", etc., are correct.

Wrong. The explanation refers to the dimensions of the blocks.

Equivalence judgment. Nonspecific statement of equivalence:

"They're alike", "They belong together", "They don't belong together"

Limited verbal. Brief reasons indicating limited verbalization:

"To set down", "Because"

Refusal. The child refused to respond. Responses such as:

"I don't want to tell you"

or the tester wrote "R".

Don't know. The child says he doesn't know:

"I don't know", "I forget"

or tester wrote "DK".

No Response. The tester wrote "NR", or there is nothing written even though the child completed the preceding item. Nonverbal responses.

Table III-18

CONCEPT DEVELOPMENT TEST
PERCENT PASSING BY AGE

Item	Age 3 N=5- 6	3½ N=4-24	4 N=2-29	4½ N=6-42	5 N=2-34	5½ N=1-26	6 N=4-16	6½ N=2- 9	All Ages N=1-42
1. One-to-one matching	0.0%	19.0%	23.1%	7.3%	20.6%	24.0%	25.0%	33.3%	18.6%
2. Number conservation-matched rows of checkers	16.7	40.9	39.1	47.2	51.5	54.2	81.3	100.0	51.8
3. Number conservation-collapsed row of checkers	0.0	13.0	13.8	2.5	5.9	0.0	12.5	11.1	7.1
4A. Seriation-3 dolls	0.0	45.8	37.9	33.3	47.1	46.2	62.5	55.6	42.4
4B. Seriation-4 dolls	---	16.7	6.9	14.3	14.7	19.2	31.5	22.2	15.6
4C. Seriation-5 dolls	---	0.0	0.0	0.0	2.9	7.7	25.0	22.2	4.8
4D. Seriation-7 dolls	---	---	---	---	2.9	3.9	18.8	22.2	3.8
5. Classification-first grouping	66.7	62.5	82.1	83.3	81.8	80.8	87.5	88.9	79.9
6. Classification-regrouping	16.7	37.5	25.0	20.0	24.2	32.0	31.3	11.1	26.0
7. Point to the little red block	50.0	58.3	62.1	73.8	78.8	84.6	87.5	100.0	74.1
8. Point to the big blue block	83.3	45.8	55.2	81.0	75.8	88.5	87.5	100.0	74.1
9. Point to the big red block	83.3	41.7	55.2	85.7	78.8	84.6	87.5	100.0	74.6
10. Point to the little blue block	50.0	66.7	55.2	71.4	81.8	73.1	100.0	100.0	73.5

Table III-19

CONCEPT DEVELOPMENT TEST
PERCENT OF CHILDREN GIVING ADEQUATE EXPLANATIONS
FOR CONSERVATION, SERIATION, AND CLASSIFICATION RESPONSES[1]

Items	Age								All Ages
	3	3½	4	4½	5	5½	6	6½	
	N= 4- 6	N=15-24	N=23-28	N=35-42	N=27-34	N=21-26	N=14-16	N= 8- 9	N=147-181
Conservation-matched	0.0%	9.6%	3.7%	5.0%	17.6%	24.0%	26.7%	11.1%	12.4%
Conservation-collapsed	20.0	18.1	7.1	2.4	5.9	11.5	13.3	22.2	9.4
Seriation-3 dolls	0.0	12.5	3.6	0.0	3.0	0.0	6.3	11.1	3.9
Classification									
First Explanation	0.0	13.3	13.0	45.7	55.6	61.9	57.1	75.0	42.9
Second Explanation	0.0	20.0	21.7	42.9	48.1	57.1	64.3	87.5	43.5

[1]Explanations for seriating 4, 5, and 7 dolls and for classification-regrouping are not indicated because of small Ns (see text).

Table III-20

CONCEPT DEVELOPMENT TEST
ITEM-TOTAL[1] AND INTERITEM CORRELATIONS[2]
(Item Ns range from 168 to 186)

Item	TOTAL	1	2	3	4	5	6	7	8	9
1. One-to-one matching	22									
2. Conservation-matched rows of checkers	21	06								
3. Conservation-displaced checkers	03	14	08							
4. Seriation	22	15	02	02						
5. Classification-first grouping	23	09	08	03	16					
6. Classification-regrouping	06	18	02	08	10	-21				
7. Point to the little red block	40	22	11	-08	14	20	03			
8. Point to the big blue block	45	11	11	-04	16	20	05	24		
9. Point to the big red block	48	00	24	01	10	18	02	25	70	
10. Point to the little blue block	42	06	19	-08	07	20	03	51	23	38

[1]The item-total correlations are corrected for overlap; in other words, each item is correlated with the total of all the other items, excluding itself.

[2]A missing data intercorrelation computer program was used.

Table III-21

CONCEPT DEVELOPMENT TEST
ROTATED FACTOR LOADINGS[1]
FIVE FACTORS EXTRACTED
(Item Ns range from 168 to 186)

	Items	FI	FII	FIII	FIV	FV	h^2
1.	One-to-one matching	12	31	-18	-63	26	60
2.	Conservation-matched rows of checkers	19	63	03	27	33	62
3.	Conservation-displaced checkers	-02	78	00	-20	-25	70
4.	Seriation	19	-12	07	-72	-01	57
5.	Classification-first grouping	15	11	72	-33	19	70
6.	Classification-regrouping	08	09	-81	-25	05	74
7.	Point to the little red block	09	-07	04	-22	82	73
8.	Point to the big blue block	89	-03	02	-17	10	83
9.	Point to the big red block	90	09	04	03	21	86
10.	Point to the little blue block	24	60	05	04	80	71
	PCT. V	18	11	12	13	16	

Five factors accounted for 70.6% of the total variance.

[1]Principal components factor analysis followed by a varimax rotation.

Table III-22

CONCEPT DEVELOPMENT TEST
ITEMS LOADING HIGHEST ON EACH FACTOR
FIVE FACTORS EXTRACTED

		Loading
FACTOR I	(17.7%)	
9.	Point to the big red block	.90
8.	Point to the big blue block	.89
FACTOR II	(11.4%)	
3.	Conservation - collapsed checkers	.78
2.	Conservation - matched rows of checkers	.63*
1.	One-to-one matching	.31*
FACTOR III	(12.2%)	
6.	Classification - Regrouping	-.81
5.	Classification - First grouping	.72*
FACTOR IV	(12.8%)	
4.	Seriation	-.72
1.	One-to-one matching	-.63*
5.	Classification - First grouping	-.33*
FACTOR V	(16.5%)	
7.	Point to the little red block	.82
10.	Point to the little blue block	.80
2.	Conservation - matched rows	.33*

Five factors accounted for 70.6% of the total variance.

*Item also shows substantial loading on another factor.

Table III-23

NINE-ITEM CONCEPT DEVELOPMENT TEST
ROTATED FACTOR LOADINGS[1]
FOUR FACTORS EXTRACTED

(Item Ns Range from 168 to 186)

	Item	FI	FII	FIII	FIV	h^2
1.	One-to-one matching	-18	64	-18	34	59
2.	Conservation-matched rows of checkers	19	-23	-33	64	61
3.	Conservation-collapsed checkers	-03	20	29	76	70
4.	Seriation	17	72	05	-14	57
5.	Classification-first grouping	23	42	-22	02	28
7.	Point to the little red block	07	28	-80	-03	73
8.	Point to the big blue block	87	20	-10	00	81
9.	Point to the big red block	89	01	-23	12	85
10.	Point to the little blue block	22	01	-81	02	71
	PCT. V	19	15	18	13	

Four factors accounted for 64.9% of the total variance.

[1]Principal components factor analysis followed by a varimax rotation.

Table III-24

NINE-ITEM CONCEPT DEVELOPMENT TEST
ITEMS LOADING HIGHEST ON EACH FACTOR

(Items Ns Range from 168 to 186)

		Loading
FACTOR I	(19.5%)	
9.	Point to the big red block	.89
8.	Point to the big blue block	.87
FACTOR II	(14.5%)	
4.	Seriation	.72
1.	One-to-one matching	.64*
5.	Classification - first grouping	.42
FACTOR III	(18.2%)	
10.	Point to the little blue block	-.81
7.	Point to the little red block	-.80
2.	Conservation - matched rows of checkers	-.33
FACTOR IV	(12.6%)	
3.	Conservation - collapsed checkers	.76
2.	Conservation - matched rows of checkers	.64*
1.	One-to-one matching	.34*

Four factors accounted for 64.9% of the total variance

*Item also shows substantial loading on another factor.

Figure III-1

FOOD INTAKE CODING INSTRUCTIONS

Food Intake coding is based on the total amount of food eaten during the day. When figuring the total amount of milk, etc., it does not matter at what meal the child gets the food.

In calculating the food score for each group, it does not matter which specific foods were eaten. Add all foods of one group together.

Food Group	Code # of Servings (e.g.,1.0,1.5,2.25, etc.) 1 serving =	Foods Included
Milk	1 cp	milk
	2 oz	cheese
	8 oz	ice cream
Meat	2 oz	beef, veal, pork, lamb, poultry, fish
	1/4 cp	dried beans and peas
	5 Tbl	peanut butter
	1 cp	almonds
Eggs	(Code # of eggs)	eggs
Vitamin A rich vegetables	1/4 cp or 1 stalk	carrots, collards, dandelion greens, kale, mustard greens, pumpkin, spinach, squash, sweet potatoes, turnip greens
Citrus fruits and Vitamin C rich vegetables	1/4 cp	orange juice
	1/2 med. fruit	orange
	1/2 cp	grapefruit juice
	1/2 med. fruit	grapefruit
	1 cp	pineapple
	1 cp	raspberries
	1/2 cp	strawberries
	1 med. fruit	tangerine
	1/2 cp	tangerine juice
	1 wedge (4" x 8")	watermelon
	6 slices or 1 fruit	tomato
	1 cp	tomato juice
Other fruits and vegetables	1/4 cp	other vegetable
	1/4 cp	other fruit juice
	1/2 small fruit	apple
	1/2 med. or 1/2 cp	potato

(Continued)

Figure III-1 (cont.)

FOOD INTAKE CODING INSTRUCTIONS

(Continued)

Food Group	Code # of Servings (e.g., 1.0,1.5,2.25,etc.) 1 serving =	Foods Included
Breads and cereals	1 slice	bread
	1/2 cp	cereal
	1/2 cp	maccaroni
	1/2 cp	rice
	1 med.	biscuit
	1/2 cp	grits
	1/2 cp	noodles

Combinations of Foods	Proportion of Ingredients
Cream potatoes	1 part potato, 1 part milk
Gumbo	1 part rice, 1 part chicken, 1 p sausage
Canned soup	1 cp vegetable = 1/4 cp 'other' vegetables
	1 cp chicken noodle = 1/2 cp noo
Uncanned soup	1 cp = 2 Tbl meat, 2 Tbl vegetab
French toast	6 pieces = 1 egg, 6 slices bread
	3 pieces = 1/2 egg, 3 slices bre
	2 pieces = 1/3 egg, 2 slices bre
Chile (plain)	3/4 cp = 1/2 cp meat
	1/2 cp = 1/4 cp meat
Chile (with beans, etc.)	1 part beans, 1/2 part meat, 1 p tomato juice
Spaghetti and meatballs	3 parts spaghetti, 1 part meat
Cheese maccaroni	3 parts maccaroni, 1 part cheese
Pot pie (1)	pie crust = 1 serving bread
	meat = 2 oz
	disregard vegetables
Tuna sandwich	2 slices bread, 3 Tbl tuna
Peanut butter sandwich	2 slices bread, 2 Tbl peanut but
TV dinner (e.g., chicken)	3 pieces chicken = 5 ozs
	1/4 cp vegetables
	1/2 cp mashed potatoes
Babyfood (combination jars)	count as vegetable, no meat
Taco	meat = 1/4 cp
	cheese = 1 Tbl
	lettuce = 1/4 cp
Tamale	1 part mean, 1 part corn bread
Beef stew	1 cp = 1/4 cp mean, 1/2 cp veget
Hamburger Helper	1/4 cp = 1 Tbl meat, 1 Tbl macca
Pudding	1 cp = 1 egg, 1 cp milk

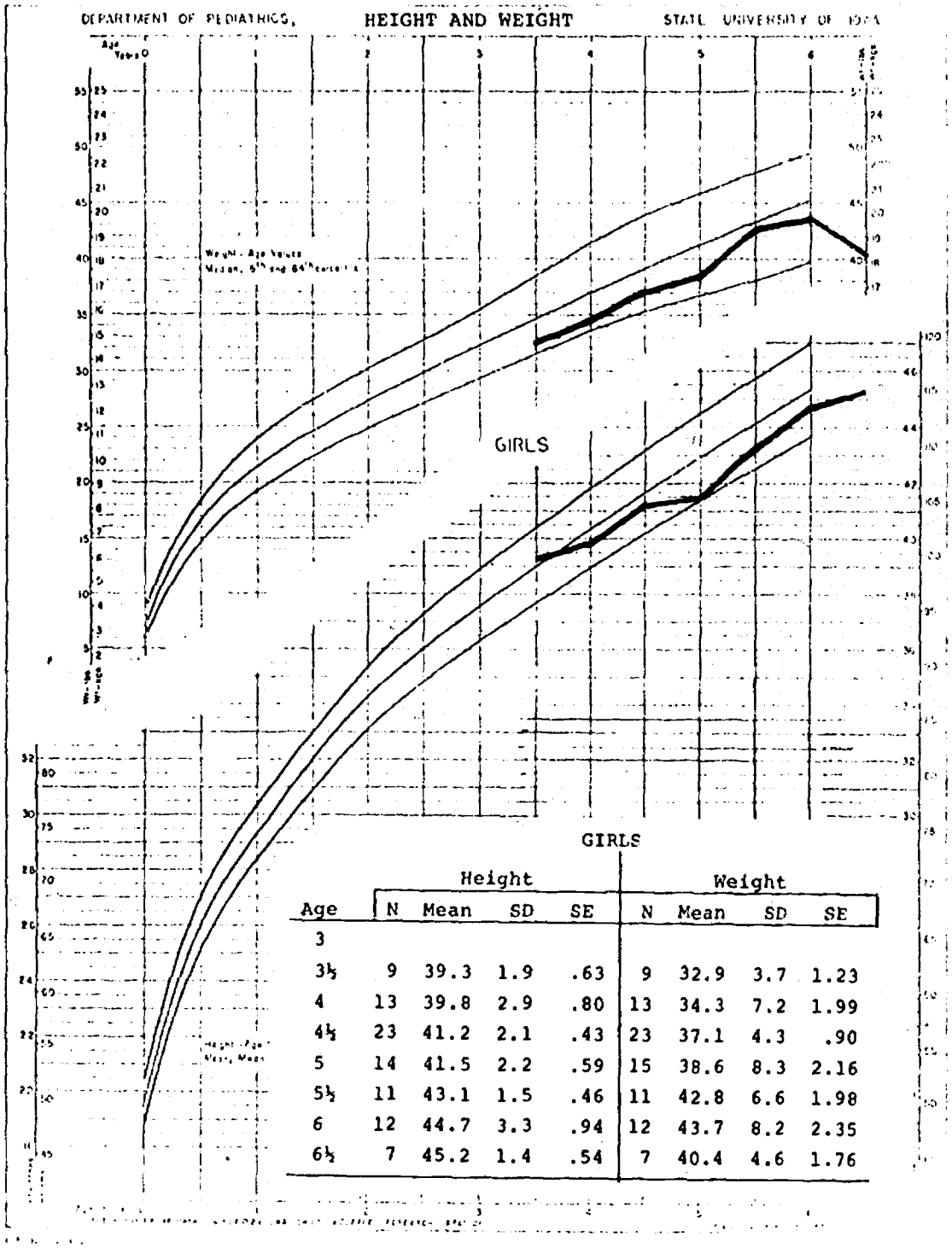
Table III-25

FOOD INTAKE QUESTIONNAIRE
MEAN NUMBER OF SERVINGS FOR EACH FOOD GROUP
AND PROPORTIONS OF DAILY TOTAL - FOOD SCORES AND NUTRITION SCORES
(N=177)

Food Group	Number of Servings		Proportion of Total[1]	
	Mean	SD	Mean	SD
Food Scores				
Milk	1.79	1.47	.12	.10
Meat	3.53	2.65	.24	.14
Eggs	.60	.85	.05	.07
Vitamin-A vegetables	.22	.74	.02	.05
Citrus fruits	1.05	2.03	.06	.11
Other fruits and vegetables	2.87	3.43	.17	.14
Bread and cereal	4.95	2.70	.35	.16
FOOD TOTAL	15.01	6.93	---	---
Nutrition Scores				
Milk	1.44	.90	.16	.10
Meat	1.31	.25	.16	.05
Eggs	.25	.29	.03	.04
Vitamin-A vegetables	.08	.20	.01	.03
Citrus fruits	.32	.45	.03	.05
Other fruits and vegetables	1.66	.94	.19	.10
Bread and cereal	3.45	.90	.41	.12
NUTRITION TOTAL	8.51	1.93	---	---
Nutrition Score for Combined Food Groups				
Milk	1.44	.90	.17	---
Meat and eggs	1.56	.37	.18	---
All fruits and vegetables	2.06	1.23	.24	---
Breads and cereals	3.45	1.93	.41	---
TOTAL	8.51	1.93	---	---

[1]Proportions calculated for individual cases then mean and SD computed, except for scores in combined food groups for which proportions were calculated from the mean number of servings.

Figure III-2



GIRLS

Age	Height N	Height Mean	Height SD	Height SE	Weight N	Weight Mean	Weight SD	Weight SE
3								
3½	9	39.3	1.9	.63	9	32.9	3.7	1.23
4	13	39.8	2.9	.80	13	34.3	7.2	1.99
4½	23	41.2	2.1	.43	23	37.1	4.3	.90
5	14	41.5	2.2	.59	15	38.6	8.3	2.16
5½	11	43.1	1.5	.46	11	42.8	6.6	1.98
6	12	44.7	3.3	.94	12	43.7	8.2	2.35
6½	7	45.2	1.4	.54	7	40.4	4.6	1.76

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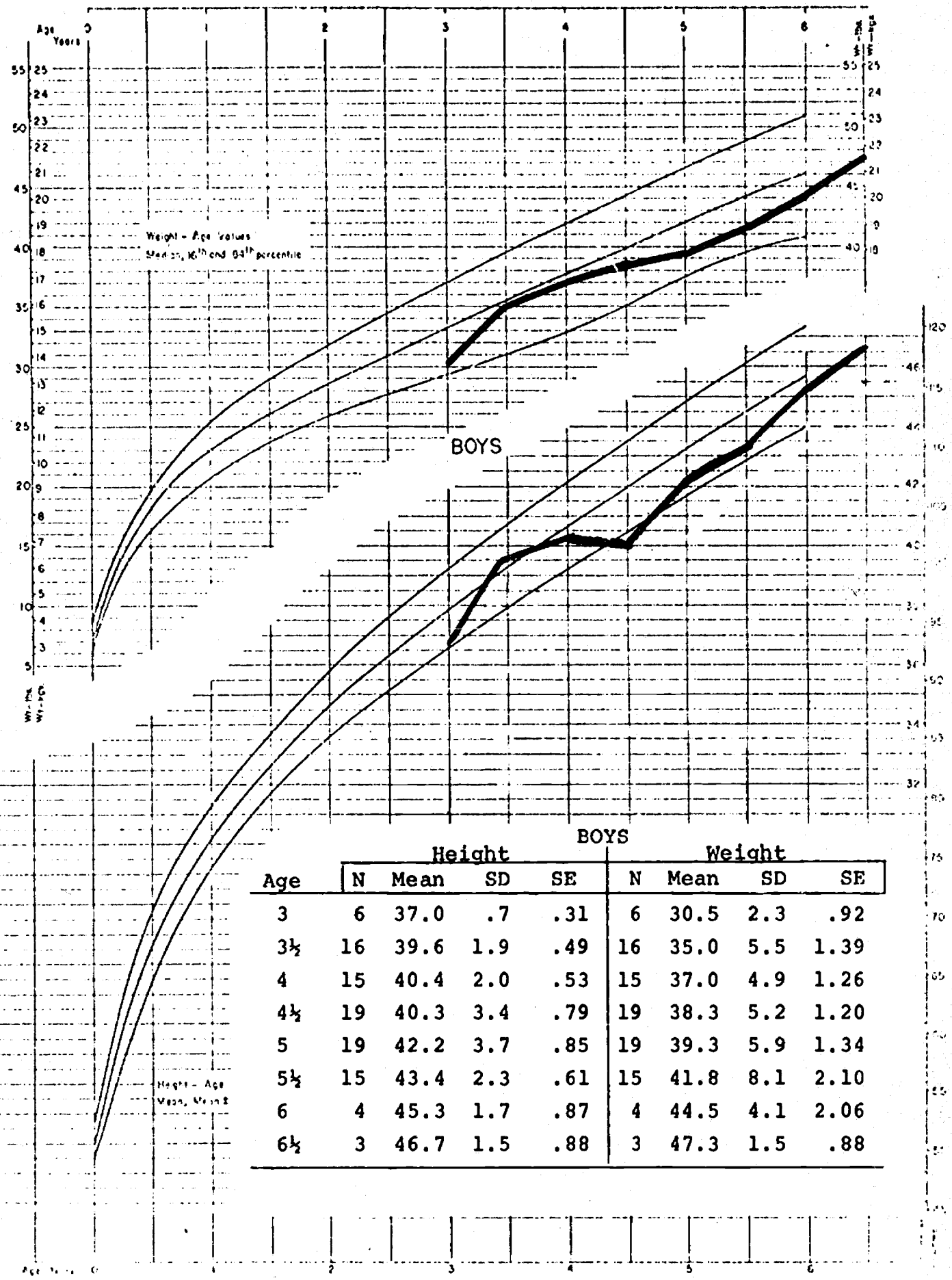

BOYS

Age	Height N	Height Mean	Height SD	Height SE	Weight N	Weight Mean	Weight SD	Weight SE
3	6	37.0	.7	.31	6	30.5	2.3	.92
3½	16	39.6	1.9	.49	16	35.0	5.5	1.39
4	15	40.4	2.0	.53	15	37.0	4.9	1.26
4½	19	40.3	3.4	.79	19	38.3	5.2	1.20
5	19	42.2	3.7	.85	19	39.3	5.9	1.34
5½	15	43.4	2.3	.61	15	41.8	8.1	2.10
6	4	45.3	1.7	.87	4	44.5	4.1	2.06
6½	3	46.7	1.5	.88	3	47.3	1.5	.88

KEY TO

SCHAEFER BEHAVIOR INVENTORY ITEMS

TASK ORIENTATION SUBTEST

1. Pays attention to what he (she) is doing when other things are going on around him (her).
4. Stays with a job until he (she) finishes it.
7. Becomes very involved in what he (she) is doing.
10. Goes from one thing to another; quickly loses interest in things.
13. Watches carefully when a home visitor is showing how to do something.

EXTRAVERSION-INTROVERSION SUBTEST

2. Tries to be with another person or group of people.
5. Likes to take part in activities with others.
8. Enjoys being with others.
11. Watches others, but doesn't join with them.
14. Does not wait for others to approach him (her), but makes the first friendly move.

HOSTILITY-TOLERANCE SUBTEST

3. Gets impatient or unpleasant if he (she) can't get what he (she) wants when he (she) wants it.
6. Slow to forgive when offended.
9. Stays angry for a long time after an argument.
12. Complains or whines if he (she) can't get his (her) own way.
15. Gets angry when he (she) has to wait his (her) turn or share with others.

Table III-26

SCHAEFER BEHAVIOR INVENTORY
ITEM RESPONSE DISTRIBUTIONS

Item[1]	N	Rating 1	2	3	4	5	6	7
1	180	02%	01%	13%	39%	12%	26%	08%
2	180	01	01	06	10	13	38	32
3	180	04	07	18	22	18	17	14
4	180	07	11	11	30	08	26	07
5	180	01	0	04	07	09	32	47
6	180	19	21	14	17	08	13	08
7	180	0	02	08	18	12	36	26
8	180	01	0	01	06	07	18	67
9	180	34	30	11	13	05	05	02
10	179	08	08	13	22	22	18	08
11	180	08	06	06	13	10	27	31
12	180	07	09	21	19	12	17	17
13	180	01	03	10	16	08	37	26
14	180	02	09	10	14	08	29	27
15	180	16	16	23	12	07	16	10

[1]See key to items.

Table III-27

SCHAEFER BEHAVIOR INVENTORY
INTERITEM[1] AND ITEM-SUBTOTAL[2] CORRELATIONS
(Item Ns range from 180 to 181)

	Task Orientation						Extraversion-Introversion						Hostility Tolerance				
Item[3]	1	4	7	10*	13	Sub-total	2	5	8	11*	14	Sub-total	3	6	9	12	15
Task Orientation																	
1																	
4	29																
7	25	20															
10*	22	23	32														
13	21	31	23	19													
SUBTOTAL	37	39	38	35	36												
Extraversion-Introversion																	
2	13	- 0	29	07	15	18											
5	17	25	26	22	28	36	49										
8	14	09	24	06	33	28	42	41									
11*	03	08	06	13	06	13	16	13	17								
14	18	16	26	07	25	27	22	20	27	13							
SUBTOTAL	19	18	33	17	32	37	45	43	47	21	28						
Hostility Tolerance																	
3	-09	-18	-10	-37	-16	-30	- 0	-14	-12	-07	-03	-11					
6	-03	01	-16	-16	-14	-16	-06	-01	-15	-43	-12	-29	13				
9	-09	05	-17	-23	-16	-18	-15	-16	-13	-16	-21	-27	18	44			
12	-10	-24	-07	-38	-14	-32	-06	-03	-07	-09	01	-07	61	10	23		
15	04	-06	-22	-38	-08	-24	-12	-13	-11	-21	-01	-18	41	29	29	43	
SUBTOTAL	-08	-12	-21	-46	-20	-35	-12	-13	-17	-30	-10	-28	49	32	41	49	52

[1] A missing data intercorrelation computer program was used.
[2] The item-total correlations are corrected for overlap; in other words, each item is correlated with the total of all the other items, excluding itself.
[3] See key to items.
[4] These items were reversed in scoring so that a high numerical score indicates a socially desirable behavior. The signs of the correlations are also reversed.

Table III-28

SCHAEFER BEHAVIOR INVENTORY
ROTATED FACTOR LOADINGS[1]
FOUR FACTORS EXTRACTED

(Item Ns range from 180 to 181)

Item[2]	FI	FII	FIII	FIV	h^2
1	03	-03	00	69	48
2	83	00	-09	-01	69
3	-05	80	03	-07	66
4	-03	-23	15	71	57
5	75	-12	03	23	63
6	04	08	86	-05	74
7	34	-13	-18	44	36
8	71	-02	-15	17	55
9	-13	22	64	-05	48
10	05	-60	-15	33	50
11	10	-03	-65	04	43
12	02	82	04	-08	69
13	25	-10	-11	57	41
14	28	17	-29	46	40
15	-14	68	34	12	61
PCT. V	14	16	13	13	

Four factors accounted for 54.7% of the total variance

[1]Principal components factor analysis followed by a varimax rotation.

[2]See key to items.

Table III-29

SCHAEFER BEHAVIOR INVENTORY
ITEMS LOADING HIGHEST ON EACH FACTOR
FOUR FACTORS EXTRACTED

		Loading
FACTOR I	(13.7%)	
2.	Tries to be with another person or group of people-	.83
5.	Likes to take part in activities with others ------	.75
8.	Enjoys being with others ----------	.71
FACTOR II	(15.5%)	
12.	Complains or whines if he (she) can't get his (her) own way ----------	.82
3.	Gets impatient or unpleasant if he (she) can't get what he (she) wants when he (she) wants it --------	.80
15.	Gets angry when he (she) has to wait his (her) turn or share with others ----------	.68
10.	Goes from one thing to another; quickly loses interest in things ----------	-.60
FACTOR III	(12.6%)	
6.	Slow to forgive when offended ----------	.86
11.	Watches others, but doesn't join with them --------	-.65
9.	Stays angry for a long time after an argument -----	.64
FACTOR IV	(12.9%)	
4.	Stays with a job until he (she) finishes it --------	.71
1.	Pays attention to what he's (she's) doing when other things are going on around him (her) --------	.69
13.	Watches carefully when a home visitor is showing how to do something ----------	.57
14.	Does not wait for others to approach him (her), but makes the first friendly move ----------	.46
7.	Becomes very involved in what he (she) is doing ---	.44

Four factors accounted for 54.7% of the total variance.

Table III-30

SCHAEFER BEHAVIOR INVENTORY
REVISED ROTATED FACTOR LOADINGS[1]
THREE FACTORS SPECIFIED
(Item Ns range from 180 to 181)

Item[2]	FI	FII	FIII	h^2
1	46	-22	23	32
2	63	12	-24	47
3	-02	77	09	61
4	40	-42	36	47
5	70	-07	-05	49
6	-08	13	76	60
7	55	-20	-09	35
8	66	03	-21	48
9	-17	23	62	46
10	21	-66	-10	49
11	16	-05	-60	39
12	02	81	09	66
13	56	-23	04	37
14	55	06	-14	32
15	-01	59	45	56
PCT. V	18	16	12	

Three Factors accounted for 46.9% of the total variance

[1]Principal components factor analysis followed by a varimax rotation.

[2]See key to items.

Table III-31

SCHAEFER BEHAVIOR INVENTORY
ITEMS LOADING HIGHEST ON EACH FACTOR
THREE FACTORS SPECIFIED

		Loading
FACTOR I	(18.1%)	
5.	Likes to take part in activities with others ------	.70
8.	Enjoys being with others ----------	.66
2.	Tries to be with another person or group of people-	.63
13.	Watches carefully when a home visitor is showing how to do something ----------	.56
7.	Becomes very involved in what he (she) is doing ---	.55
14.	Does not wait for others to approach him (her), but makes the first friendly move ----------	.55
1.	Pays attention to what he (she) is doing when other things are going on around him (her) ----------	.46
4.	Stays with a job until he (she) finishes it -------	.40*
FACTOR II	(16.4%)	
12.	Complains or whines if he (she) can't get his (her) own way ----------	.81
3.	Gets impatient or unpleasant if he (she) can't get what he (she) wants when he (she) wants it --------	.77
10.	Goes from one thing to another; quickly loses interest in things ----------	-.66
15.	Gets angry when he (she) has to wait his (her) turn or share with others ----------	.59
4.	Stays with a job until he (she) finishes it -------	-.42*
FACTOR III	(12.5%)	
6.	Slow to forgive when offended ----------	.76
9.	Stays angry for a long time after an argument -----	.62
11.	Watches others, but doesn't join with them --------	-.60
4.	Stays with a job until he (she) finishes it -------	.36*

Three factors accounted for 46.9% of the total variance

---

*Item also shows substantial loading on another factor.

Table III-32

FALL-SPRING STABILITY AND CHANGE IN SBI ITEM RESPONSES

Item	Fall Mean	Fall S.D.	Spring Mean	Spring S.D.	Difference Mean	Difference S.D.	r	t
Task Orientation								
1. Pays attention to what doing when other things going on around	4.52	1.53	4.61	1.37	.09	2.01	.05	.46
4. Stays with job until finishes it	4.19	1.69	4.45	1.60	.26	1.89	.34	1.35
7. Becomes involved in what is doing	5.22	1.64	5.39	1.37	.17	1.87	.24	.87
10. Goes from one thing to another; quickly loses interest	4.31	1.76	4.28	1.55	-.02	2.17	.14	-.09
13. Watches carefully when Home Visitor showing how to do something	5.45	1.38	5.45	1.42	.00	1.49	.43	.00
Extraversion-Introversion								
2. Tries to be with another person or group of people	5.35	1.70	5.80	1.30	.45	1.87	.24	2.30*
5. Likes to take part in activities with others	5.70	1.66	6.12	1.17	.41	1.57	.42	2.54*
8. Enjoys being with others	6.17	1.49	6.38	1.17	.21	1.67	.23	1.23
11. Watches others, but doesn't join with them	4.69	2.04	4.98	1.92	.29	2.47	.22	1.12
14. Does not wait for others to approach, but makes first friendly move	4.81	1.92	4.97	1.83	.16	2.31	.24	.67
Hostility-Tolerance								
3. Gets impatient or unpleasant when can't have what wants when he wants it	4.43	1.67	4.47	1.70	.04	1.78	.45	.23
6. Slow to forgive when offended	3.66	2.07	3.49	2.00	-.16	2.73	.10	-.57
9. Stays angry for long time after argument	2.23	1.55	2.53	1.64	.30	1.92	.28	1.51
12. Complains if can't get own way	4.43	1.86	4.32	1.91	-.11	1.76	.57	-.59
15. Gets angry when has to wait turn or share	3.58	2.00	3.75	1.94	.17	1.78	.59	.93

*p < .05

Table III-33

HIGH/SCOPE PUPIL OBSERVATION CHECKLIST
ITEM RESPONSE DISTRIBUTIONS

Item	N	Rating 1	2	3	4	5	6	7
Cooperative	180	07 %	07 %	04 %	14 %	14 %	26 %	29 %
Sociable	181	11	08	14	11	13	18	25
Outgoing	181	07	07	13	18	15	18	22
Involved	181	03	07	09	18	25	24	14
Agreeable	181	03	06	06	17	17	25	27
Active	181	03	03	05	23	13	24	29
Keeps Trying	181	05	09	11	25	15	19	16
Talkative	181	14	11	11	20	13	12	19
Attentive	181	02	08	12	23	17	20	18

Table III-34

HIGH/SCOPE PUPIL OBSERVATION CHECKLIST INTERITEM[1] AND ITEM-SUBTOTAL[2] INTERCORRELATIONS

(Item Ns range from 180 to 181)

	Test Orientation Subtotal	Sociability Subtotal	Test Orientation					Sociability			
			Coop	Invol	Agree	Trying	Atten	Soc	Outgc	Active	Talk
Sociability Subtotal	70										
Cooperative	87	72									
Involved	98	77	61								
Agreeable	89	77	63	87							
Keeps Trying	83	68	79	62	70						
Attentive	85	65	79	63	68	81					
Sociable	73	88	56	68	75	62	62				
Outgoing	78	91	71	56	58	70	71	52			
Active	75	82	48	76	75	55	56	70	45		
Talkative	64	83	71	47	54	76	72	53	68	40	

[1] A missing data intercorrelation computer program was used.

[2] The item-total correlations are corrected for overlap; in other words, each item is correlated with the total of all the other items, excluding itself.

Table III-35

HIGH/SCOPE PUPIL OBSERVATION CHECKLIST
ROTATED FACTOR LOADINGS[1]
(Item Ns range from 180 to 181)

Item	FI	FII	h^2
Cooperative	83	35	81
Sociable	35	85	85
Outgoing	42	83	87
Involved	81	42	84
Agreeable	79	43	86
Active	39	76	73
Keeps Trying	80	31	73
Talkative	21	88	83
Attentive	87	21	79
PCT. V	43	38	

Two factors accounted for 80.7% of the total variance.

[1]Principal components factor analysis followed by a varimax rotation.

Table III-36

HIGH/SCOPE PUPIL OBSERVATION CHECKLIST
ITEMS LOADING HIGHEST ON EACH FACTOR

		Loading
FACTOR I	(43%)	
9.	Attentive - inattentive	.87
1.	Resistive - cooperative	.83
4.	Involved - indifferent	.81
7.	Gives up - keeps trying	.80
5.	Defensive - agreeable	.79
FACTOR II	(38%)	
8.	Quiet - talkative	.88
2.	Shy - sociable	.85
3.	Outgoing - withdrawn	.83
6.	Active - passive	.76

Two factors accounted for 80.7% of the total variance.

Table III-37

FALL-SPRING STABILITY AND CHANGE IN POCL ITEM RESPONSES

Item	Fall		Spring		Difference		r	t
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Test Orientation								
1. Resistive - Cooperative	5.27	1.71	5.48	1.66	.21	1.88	.38	1.06
4. Indifferent - Involved	5.26	1.55	5.01	1.52	-.24	1.59	.46	-1.45
5. Defensive - Agreeable	5.53	1.36	5.41	1.60	-.12	1.67	.38	- .69
7. Gives up - Keeps trying	4.91	1.69	4.78	1.69	-.13	1.99	.31	- .63
9. Inattentive - Attentive	4.88	1.86	5.01	1.63	.13	1.93	.39	.65
Sociability								
2. Shy - Sociable	4.41	2.10	4.71	2.00	.29	2.36	.34	1.19
3. Withdrawn - Outgoing	4.65	1.79	4.67	1.88	.02	2.03	.39	.10
6. Passive - Active	5.57	1.45	5.27	1.62	-.29	1.72	.38	-1.63
8. Quiet - Talkative	3.97	2.10	4.38	2.08	.41	2.03	.53	1.94

Table III-38(a)

DESCRIPTIVE DATA BY AGE
PRESCHOOL INVENTORY
CONCEPT DEVELOPMENT TEST
8-BLOCK PLACEMENT SCORE

	PRESCHOOL INVENTORY				CONCEPT DEVELOPMENT TEST				8-BLOCK PLACEMENT SCORE			
AGE	N	Mean	SD	SE	N	Mean	SD	SE	N	Mean	SD	SE
3	3	9.3	3.5	2.03	6	3.5	1.8	.72	3	2.7	0.6	.33
3½	19	11.0	3.7	.85	21	4.4	1.9	.41	22	3.2	1.9	.40
4	27	11.0	4.9	.94	29	4.1	1.5	.29	27	3.4	1.3	.26
4½	37	13.8	5.4	.88	42	4.8	1.7	.27	41	4.4	1.9	.30
5	33	16.4	4.8	.83	33	5.2	1.9	.34	29	4.6	2.2	.41
5½	26	17.8	6.6	1.29	26	5.3	1.5	.30	24	4.5	1.8	.37
6	16	20.5	6.3	1.58	16	6.3	1.9	.48	16	5.6	2.0	.50
6½	10	21.0	5.2	1.65	9	6.8	1.2	.40	7	6.3	1.1	.42
TOTAL	171	15.1	6.2	.48	182	5.0	1.9	.14	169	4.3	2.0	.15

[1] A Score was excluded from this analysis if the child had 27 or fewer valid responses out of the 32 total.

Table III-38(b)

DESCRIPTIVE DATA BY AGE
DENVER DEVELOPMENTAL SCREENING TEST

AGE	FINE MOTOR[1]				LANGUAGE[2]				GROSS MOTOR[3]				PERSONAL-SOCIAL[4]			
	N	Mean	SD	SE	N	Mean	SD	SE	N	Mean	SD	SE	N	Mean	SD	SE
3	6	2.7	1.4	.56	5	2.4	1.1	.51	3	2.3	1.5	.88	6	4.7	1.4	.56
3½	24	4.6	1.7	.35	21	2.7	1.0	.22	21	4.0	1.1	.23	25	5.6	1.0	.21
4	29	4.9	1.4	.25	26	2.4	1.4	.28	28	4.2	1.3	.24	29	6.1	1.0	.19
4½	42	5.4	1.9	.30	39	3.4	1.8	.28	41	4.4	1.4	.22	42	6.0	1.1	.17
5	34	6.6	1.3	.22	32	4.1	1.9	.33	34	5.1	1.3	.22	34	6.4	.7	.13
5½	26	6.9	1.1	.22	25	4.5	1.4	.27	26	4.8	1.8	.35	26	6.4	.9	.19
6	16	6.8	1.4	.35	16	4.7	1.7	.44	16	5.9	1.5	.37	16	6.1	1.4	.35
6½	9	7.2	.7	.22	9	5.3	1.0	.33	9	6.8	1.2	.40	9	6.6	.5	.18
TOTAL	186	5.8	1.8	.13	173	3.6	1.8	.13	178	4.7	1.6	.12	187	6.1	1.1	.08

[1]Includes items 1-s, 2 through 7 and 8-3.
[2]Includes items 9 through 15.
[3]Includes items 16 through 22; a single score for item 16 (balances on one foot) was created such that 1=balance for 1 sec. 2=balance for 5 sec.; and 3=balance for 10 seconds.

Table III-38(c)

DESCRIPTIVE DATA BY AGE
SCHAEFER BEHAVIOR INVENTORY
PUPIL OBSERVATION CHECKLIST

	SCHAEFER BEHAVIOR INVENTORY												PUPIL OBSERVATION CHECKLIST							
	TASK ORIENTATION				EXTRAVERSION-INTROVERSION				HOSTILITY-TOLERANCE				TEST ORIENTATION				SOCIABILITY			
AGE	N	Mean	SD	SE	N	Mean	SD	SE	N	Mean	SD	SE	N	Mean	SD	SE	N	Mean	SD	SE
3	4	22.3	2.5	1.25	4	29.5	3.7	1.85	4	18.5	2.4	1.19	4	17.3	4.3	2.17	4	18.8	9.9	4.94
3½	25	21.8	4.6	.91	25	26.8	5.6	1.11	25	20.3	6.0	1.21	24	21.7	7.4	1.51	24	17.0	6.4	1.32
4	29	23.8	4.2	.78	29	29.7	4.1	.76	29	18.7	6.1	1.12	28	23.2	7.2	1.37	28	17.9	7.5	1.42
4½	41	24.0	4.9	.77	41	28.2	5.0	.78	41	18.0	6.3	.98	41	23.9	8.0	1.25	41	18.6	7.1	1.10
5	31	23.8	4.6	.83	31	28.2	3.3	.59	31	19.1	5.7	1.02	33	25.2	7.2	1.26	32	19.2	6.4	1.13
5½	26	25.5	3.7	.73	26	29.1	4.7	.91	26	18.0	6.6	1.29	26	25.0	7.6	1.49	26	18.8	7.4	1.45
6	16	26.9	5.9	1.47	16	28.9	5.2	1.30	16	17.6	6.2	1.54	16	28.5	5.7	1.43	16	21.9	5.5	1.37
6½	8	24.6	4.9	1.73	8	27.9	3.4	1.19	8	15.3	4.1	1.44	10	29.2	5.1	1.62	10	19.1	5.8	1.84
TOTAL	180	24.1	4.7	.35	180	28.5	4.6	.34	180	18.5	6.0	.45	182	24.4	7.5	.55	181	18.7	6.8	.51

Table III-38(d)

DESCRIPTIVE DATA BY AGE
CHILD FOOD INTAKE QUESTIONNAIRE

	FOOD TOTAL				NUTRITION TOTAL			
AGE	N	Mean	SD	SE	N	Mean	SD	SE
3	4	12.0	3.8	1.88	4	8.1	1.6	.79
3½	22	14.3	6.2	1.32	22	8.7	2.1	.44
4	28	15.1	6.3	1.19	28	8.6	1.6	.30
4½	38	16.9	8.4	1.36	38	8.9	2.2	.36
5	32	13.3	6.2	1.09	32	7.8	1.7	.31
5½	25	16.3	6.9	1.38	25	8.8	1.8	.36
6	15	13.9	7.2	1.85	15	8.2	1.8	.47
6½	6	13.3	6.6	2.68	6	8.4	2.8	1.15
TOTAL	170	15.0	6.9	.53	170	8.5	1.9	.15

Table III-39(a)

DESCRIPTIVE DATA BY AGE AND SEX
PRESCHOOL INVENTORY
CONCEPT DEVELOPMENT TEST
8-BLOCK PLACEMENT SCORE

		PRESCHOOL INVENTORY				CONCEPT DEVELOPMENT TEST				8-BLOCK PLACEMENT SCORE			
Age	Sex	N	Mean	SD	SE	N	Mean	SD	SE	N	Mean	SD	SE
3	M	3	9.3	3.5	2.03	6	3.5	1.8	.72	3	2.7	0.6	.33
	F												
3½	M	12	11.5	4.4	1.28	14	4.7	2.1	.55	16	2.6	1.4	.34
	F	7	10.1	2.0	.77	7	3.9	1.5	.55	6	4.7	2.3	.95
4	M	15	11.2	4.9	1.27	16	4.8	1.4	.35	16	3.9	1.4	.35
	F	12	10.8	5.0	1.45	13	3.3	1.4	.38	11	2.6	0.8	.24
4½	M	15	14.3	5.8	1.49	19	4.5	2.1	.47	18	4.7	1.9	.44
	F	22	13.5	5.2	1.11	23	5.0	1.4	.28	23	4.2	2.0	.42
5	M	19	17.7	4.5	1.03	18	5.9	1.6	.37	16	5.3	2.1	.53
	F	14	14.7	4.8	1.27	15	4.5	2.1	.54	13	3.7	2.1	.57
5½	M	15	18.3	6.4	1.65	15	5.3	1.5	.39	13	4.2	1.5	.43
	F	11	17.1	7.1	2.13	11	5.3	1.6	.49	11	4.9	2.1	.62
6	M	4	21.3	4.3	2.17	4	6.3	1.0	.48	4	4.5	1.9	.96
	F	12	20.3	7.0	2.02	12	6.3	2.2	.63	12	5.9	2.0	.57
6½	M	3	18.7	2.9	1.67	3	5.7	0.6	.33	1	6.0		
	F	7	22.0	5.8	2.20	6	7.3	1.0	.42	6	6.3	1.2	.49
TOTAL	M	86	15.1	5.9	.64	95	5.0	1.8	.18	87	4.1	1.9	.20
	F	85	15.2	6.5	.71	87	5.0	2.0	.21	82	4.5	2.1	.23

[1] A Score was excluded from this analysis if the child had 27 or fewer valid responses out of the 32 total.

Table III-39(b)

DESCRIPTIVE DATA BY AGE AND SEX
DENVER DEVELOPMENTAL SCREENING TEST

Age	Sex	FINE MOTOR[1] N	Mean	SD	SE	LANGUAGE[2] N	Mean	SD	SE	GROSS MOTOR[3] N	Mean	SD	SE	PERSONAL-SOCIAL[4] N	Mean	SD	SE
3	M	6	2.7	1.4	.56	5	2.4	1.1	.51	3	2.3	1.5	.88	6	4.7	1.4	.56
	F																
3½	M	15	4.7	1.8	.46	13	3.0	1.0	.28	12	3.9	1.1	.31	16	5.7	1.1	.28
	F	9	4.3	1.7	.55	8	2.3	.9	.31	9	4.2	1.1	.36	9	5.3	.9	.29
4	M	16	4.9	1.4	.36	14	2.9	1.6	.43	15	4.5	1.1	.27	16	6.1	1.1	.27
	F	13	4.9	1.3	.37	12	1.8	1.0	.30	13	3.9	1.5	.42	13	6.0	1.0	.28
4½	M	19	4.9	1.7	.39	18	3.7	1.9	.45	19	4.4	1.6	.37	19	5.9	1.3	.29
	F	23	5.8	2.0	.42	21	3.1	1.6	.35	22	4.5	1.2	.26	23	6.0	1.0	.21
5	M	19	6.8	1.0	.23	19	4.3	1.7	.39	19	5.3	1.4	.31	19	6.7	.5	.11
	F	15	6.3	1.6	.41	13	3.7	2.1	.58	15	4.8	1.1	.30	15	6.1	.9	.23
5½	M	15	6.7	1.2	.30	14	4.4	1.4	.37	15	4.9	1.9	.49	15	6.3	1.2	.30
	F	11	7.1	1.0	.31	11	4.5	1.4	.41	11	4.6	1.6	.49	11	6.6	.5	.15
6	M	4	6.8	1.0	.48	4	5.8	1.0	.48	4	6.3	1.5	.75	4	5.8	1.3	.63
	F	12	6.8	1.5	.45	12	4.3	1.8	.53	12	5.8	1.5	.44	12	6.2	1.5	.42
6½	M	3	7.0	1.0	.58	3	5.0	1.0	.58	3	7.0	1.0	.58	3	6.7	.6	.33
	F	6	7.3	.5	.21	6	5.5	1.0	.43	6	6.7	1.4	.56	6	6.5	.5	.22
TOTAL	M	97	5.5	1.8	.18	90	3.8	1.7	.18	90	4.7	1.6	.17	98	6.1	1.1	.12
	F	89	6.0	1.8	.19	83	3.5	1.8	.20	88	4.8	1.5	.16	89	6.1	1.0	.11

[1]Includes items 1-s, 2 through 7 and 8-3.
[2]Includes items 9 through 15.
[3]Includes items 16 through 22; a single score for item 16 (balance on one foot) was created such that 1=balance for 1 sec.; 2=balance for 5 sec.; and 3=balance for 10 seconds.
[4]Includes items 23 through 30; items 28 and 29 were combined to form one item (dresses with supervision).

Table III-39(c)

DESCRIPTIVE DATA BY AGE AND SEX
SCHAEFER BEHAVIOR INVENTORY
PUPIL OBSERVATION CHECKLIST

		SCHAEFER BEHAVIOR INVENTORY												PUPIL OBSERVATION CHECKLIST							
		TASK ORIENTATION				EXTRAVERSION-INTROVERSION				HOSTILITY-TOLERANCE				TEST ORIENTATION				SOCIABILITY			
Age	Sex	N	Mean	SD	SE	N	Mean	SD	SE	N	Mean	SD	SE	N	Mean	SD	SE	N	Mean	SD	SE
3	M	4	22.3	2.5	1.25	4	29.5	3.7	1.8	4	18.5	2.4	1.19	4	17.3	4.3	2.17	4	18.8	9.9	4.9
	F																				
3½	M	16	23.1	4.5	1.13	16	26.9	6.2	1.55	16	21.8	6.1	1.52	15	21.4	7.9	2.03	15	16.3	6.7	1.72
	F	9	19.6	3.9	1.29	9	26.8	4.6	1.53	9	17.8	5.4	1.79	9	22.2	7.0	2.33	9	18.1	6.3	2.08
4	M	16	25.2	4.2	1.04	16	31.1	3.4	.86	16	18.4	6.3	1.58	15	25.2	5.8	1.49	15	19.1	6.5	1.67
	F	13	22.1	3.7	1.02	13	27.9	4.3	1.20	13	19.0	5.9	1.65	13	20.9	8.3	2.30	13	16.5	8.6	2.39
4½	M	18	23.7	4.8	1.12	18	28.1	5.7	1.35	18	18.5	6.9	1.62	18	22.6	7.1	1.68	18	17.3	7.3	1.73
	F	23	24.1	5.2	1.08	23	28.3	4.5	.94	23	17.6	5.9	1.23	23	24.9	8.7	1.81	23	19.7	6.8	1.42
5	M	17	24.8	3.4	.83	17	28.5	4.1	.99	17	17.9	5.2	1.26	18	25.9	7.9	1.85	18	19.8	6.1	1.43
	F	14	22.6	5.7	1.52	14	27.9	2.1	.57	14	20.6	6.0	1.61	15	24.3	6.6	1.70	14	18.4	7.0	1.86
5½	M	15	25.3	4.3	1.11	15	29.2	3.7	.95	15	17.2	7.1	1.83	15	25.6	6.9	1.78	15	19.8	6.8	1.75
	F	11	25.9	2.8	.86	11	29.0	5.9	1.79	11	19.2	5.9	1.78	11	24.3	8.7	2.63	11	17.5	8.4	2.52
6	M	4	27.0	8.5	4.24	4	26.3	7.4	3.7	4	20.5	3.9	1.94	4	27.5	2.4	1.19	4	18.5	4.4	2.18
	F	12	26.8	5.3	1.52	12	29.8	4.4	1.26	12	16.7	6.6	1.91	12	28.8	6.5	1.88	12	23.0	5.5	1.58
6½	M	3	22.3	2.5	1.45	3	27.3	1.5	.88	3	15.7	4.5	2.60	3	25.3	5.9	3.38	3	20.0	5.0	2.89
	F	5	26.0	5.7	2.55	5	28.2	4.3	1.91	5	15.0	4.3	1.92	7	30.9	4.2	1.58	7	18.7	6.5	2.45
TOTAL	M	93	24.3	4.4	.45	93	28.6	4.8	.50	93	18.7	6.1	.63	92	24.0	7.1	.74	92	18.5	6.6	.69
	F	87	23.8	5.1	.54	87	28.3	4.3	.46	87	18.2	5.9	.63	90	24.9	7.9	.83	89	19.0	7.1	.75

Table III-39(d)

DESCRIPTIVE DATA BY AGE AND SEX
CHILD FOOD INTAKE QUESTIONNAIRE

Age	Sex	FOOD TOTAL N	Mean	SD	SE	NUTRITION TOTAL N	Mean	SD	SE
3	M	4	12.0	3.8	1.88	4	8.1	1.6	.79
	F								
3½	M	16	14.0	5.8	1.44	16	8.8	2.0	.50
	F	6	15.1	7.8	3.20	6	8.3	2.3	.94
4	M	16	15.8	7.2	1.81	16	8.8	1.8	.46
	F	12	14.1	4.9	1.41	12	8.4	1.2	.34
4½	M	17	19.0	10.7	2.60	17	9.1	2.7	.66
	F	21	15.3	5.6	1.21	21	8.8	1.8	.39
5	M	18	13.9	5.0	1.18	18	8.5	1.5	.36
	F	14	12.6	7.6	2.02	14	7.0	1.7	.46
5½	M	15	17.3	7.9	2.04	15	8.6	1.8	.47
	F	10	14.8	5.0	1.59	10	9.0	1.9	.59
6	M	3	21.3	11.6	6.70	3	8.8	2.1	1.20
	F	12	12.1	4.7	1.37	12	8.0	1.8	.53
6½	M	2	13.8	2.1	1.50	2	8.7	.92	.65
	F	4	13.1	8.4	4.20	4	8.3	3.6	1.80
TOTAL	M	91	15.9	7.6	.80	91	8.7	1.9	.20
	F	79	14.0	5.9	.67	79	8.3	1.9	.22

Table IV-1

PERCENT RESPONSES TO HIGH/SCOPE HOME ENVIRONMENT SCALE

(N = 162-175)

I WOULD LIKE TO ASK YOU SOME QUESTIONS ABOUT THE ACTIVITIES THAT _____ DOES FROM DAY TO DAY. SOME OF THE QUESTIONS ARE ABOUT (Child's Name) HIS (HER) TOYS, SOME ABOUT HIS (HER) FRIENDS, AND SOME ARE ABOUT THINGS THAT YOU OR OTHER ADULTS DO WITH HIM (HER). THE QUESTIONS WILL HELP US TO UNDERSTAND MORE ABOUT WHAT CONDITIONS ARE BEST FOR A YOUNG CHILD AS HE (SHE) GROWS.

Part 1.

1. HOW OFTEN DOES _____ PLAY WITH FRIENDS OF THE SAME AGE, NOT (Child's Name) COUNTING ANY BROTHERS OR SISTERS HE (SHE) MIGHT HAVE?

Would you say: 44.6 two hours or more every day
or: 27.4 several times a week
or: 28.0 not that often?

2. HOW OFTEN HAS _____ SLEPT OVERNIGHT AT A FRIEND'S HOUSE BY (Child's Name) HIS (HER) OWN CHOICE?

Has he (she) done it: 17.7 more than once
or: 5.7 just once
or: 76.6 not at all?

3. WHEN YOU ARE GROCERY SHOPPING WITH _____ HOW OFTEN DO YOU (Child's Name) LET HIM (HER) CHOOSE SOME OF THE FOOD YOU BUY FOR THE FAMILY?

Would you say: 34.7 almost every week
or: 24.9 once or twice a month
or: 40.5 not that often?

4. HOW OFTEN DOES _____ GET A CHANCE TO PICK OUT THE CLOTHES (Child's Name) YOU BUY FOR HIM (HER), SUCH AS SHOES, PANTS (OR SKIRTS) AND SHIRTS (OR BLOUSES)?

Would you say: 20.1 almost every time you buy clothes
or: 37.4 he (she) picks out a special item occasionally
or: 42.5 do you make almost all of the choices?

Child's Name_____ Time Started_____
First Last

Focal Parent's Name_____ Time Finished_____

Community/City_____ State_____ Date_____

Toster_____

Comments (Child became ill, refused, etc.)_____

_____

HIGH/SCOPE HOME ENVIRONMENT SCALE

This booklet was prepared by High/Scope Educational Research Foundation, Ypsilanti, Michigan for use under Office of Child Development, HEW, Contract No. HEW-OS-72-127.

April, 1973

5. HOW OFTEN DOES _____ GET A CHANCE TO SPEND MONEY OF HIS (HER) OWN TO BUY ANYTHING HE (SHE) WANTS?
(Child's Name)

Would you say: 55.6 once a week or more
or: 21.6 about once a month
or: 22.8 just around birthdays, Christmas, or other special occasions?

6. DOES _____ GO TO BED AT THE SAME TIME FROM DAY TO DAY, OR DOES HE (SHE) GO TO BED AT DIFFERENT TIMES?
(Child's Name)

Is bedtime: 53.1 usually within a half-hour from day to day
or: 25.1 within two hours
or: 21.7 does it often change more than two hours?

7. HOW MANY TOYS, STUFFED ANIMALS, OR OTHER THINGS DOES _____ HAVE THAT ARE HIS (HER) VERY OWN, THAT NO ONE ELSE CAN PLAY WITH UNLESS HE (SHE) LETS THEM?
(Child's Name)

Would you say: 22.0 lots of toys of his (her) own
or: 34.1 one or two special toys
or: 43.9 others can play with his (her) things anytime?

8. DOES _____ EAT BREAKFAST AND LUNCH ABOUT THE SAME TIME EVERY DAY, OR DO HIS (HER) MEALTIMES CHANGE A LOT?
(Child's Name)

Are they: 74.3 usually within a half-hour from day to day
or: 16.0 within two hours
or: 9.7 do they often change more than two hours?

9. HOW OFTEN DO YOU HOLD _____ IN YOUR LAP WHILE TALKING TO HIM (HER), COMFORTING HIM (HER), READING A STORY TO HIM (HER), OR WHILE WATCHING TELEVISION?
(Child's Name)

Would you say: 40.2 usually several times a day for ten minutes or longer
or: 28.2 several times a week
or: 31.6 not that often?

10. HOW OFTEN DO YOU TRY TO PRAISE _____ WHEN HE (SHE) DOES SOMETHING WELL OR SUCCEEDS AT SOMETHING DIFFICULT?
(Child's Name)

Would you say: 64.0 almost every day
or: 29.1 several times a week
or: 7.0 not that often?

11. HOW OFTEN DO YOU GIVE _____ A REWARD, SUCH AS CANDY, MONEY, OR FOOD, FOR BEING GOOD OR HELPING DO SOMETHING EXTRA?
(Child's Name)

Would you say: 23.6 almost every day
or: 43.1 several times a week
or: 33.3 not that often?

12. HOW MUCH TIME DO YOU USUALLY SPEND ALONE WITH _____ EACH DAY, TALKING OR DOING THINGS JUST WITH HIM (HER)?
(Child's Name)

Would you say: 36.4 over an hour
or: 41.6 about fifteen minutes or so
or: 22.0 not that often?

13. HOW OFTEN DO YOU AND _____ TALK ABOUT THE PICTURES HE (SHE) MAKES, WHAT HE (SHE) DOES DURING THE DAY, HIS (HER) FRIENDS, AND SO ON?
(Child's Name)

Would you say: 28.9 for about a half-hour or more every day
or: 41.6 for a few minutes every day
or: 29.5 several times a week or less?

14. WHERE CAN _____ SPREAD OUT HIS (HER) TOYS AND PLAY AT YOUR HOUSE?
(Child's Name)

Would you say: 25.3 only in his (her) bedroom or play area
or: 14.9 in the play area as well as in common family rooms such as the livingroom, family room, or kitchen
or: 59.8 almost anywhere in the house?

15. HOW OFTEN DOES _____ GET INTO OLD CLOTHES AND PLAY IN SAND, PUDDLES, MUD OR OTHER MESSY PLACES?
(Child's Name)

Would you say: 62.6 almost every day
or: 19.5 several times a week
or: 17.8 not that often?

16. HOW MANY PLACES ARE NEARBY WHERE _____ CAN PLAY SAFELY
(Child's Name)
OUTDOORS WHEN HE (SHE) WANTS?

Would you say: 23.1 there are lots of places so he (she) can play almost anywhere, even beyond shouting distance
or: 73.4 is he (she) limited to a yard right around the house
or: 3.5 you have to make a special trip to a park or other area when he (she) wants to play outdoors?

17. HOW OFTEN DO YOU TEMPORARILY TAKE AWAY BELONGINGS OR PRIVILEGES THAT _____ LIKES, TO PUNISH HIM (HER) FOR DOING SOMETHING
(Child's Name)
WRONG?

Would you say: 13.7 almost every day
or: 25.7 once a week or so
or: 60.6 you seldom punish him (her) by taking things away?

18. HOW OFTEN DO YOU SLAP OR SPANK _____ FOR DOING SOMETHING
(Child's Name)
WRONG?

Would you say: 34.1 almost every day
or: 35.3 about once or twice a week
or: 30.6 not that often?

19. WHEN YOU HAVE TO PUNISH _____ FOR DOING SOMETHING WRONG,
(Child's Name)
HOW OFTEN DO YOU TRY TO EXPLAIN WHY THE THINGS HE (SHE) DID ARE NOT GOOD FOR HIM (HER), FOR OTHERS, OR FOR THEIR BELONGINGS?

Would you say: 66.9 almost always
or: 22.3 quite often, say maybe half the time
or: 10.9 less often than that?

20. WHEN _____ IS VERY ANGRY BECAUSE OF SOMETHING YOU JUST DID,
(Child's Name)
HOW OFTEN DO YOU LET HIM (HER) TALK BACK TO YOU WITHOUT PUNISHMENT?

Would you say: 14.9 fairly often
or: 28.0 once in a while
or: 57.1 practically never?

21. HOW OFTEN DO YOU LET _____ HELP YOU WHILE YOU ARE COOKING THINGS, CLEANING THE HOUSE, WASHING DISHES, OR DOING OTHER HOUSEHOLD TASKS?
(Child's Name)

Would you say: 50.0 almost every day
or: 24.7 several times a week
or: 25.3 not that often?

22. HOW OFTEN DO YOU LET _____ PLAY WITH YOUR THINGS, LIKE POTS AND PANS, BLANKETS, SHOES AND HATS, AND SO ON?
(Child's Name)

Would you say: 25.3 whenever he (she) wants to
or: 16.7 only at certain times
or: 58.0 hardly ever?

23. HOW OFTEN DO YOU JOIN IN THE PLAY ACTIVITIES THAT _____ IS INVOLVED IN, SUCH AS PLAYING GAMES, DRAWING PICTURES, OR SINGING?
(Child's Name)

Would you say: 40.0 almost every day
or: 37.1 once a week or so
or: 22.9 not that often?

24. HOW OFTEN DO YOU PLAY "HOUSE", "STORE", "DOCTOR", OR OTHER MAKE-BELIEVE GAMES WITH _____?
(Child's Name)

Would you say: 9.2 almost every day
or: 23.1 several times a week
or: 67.6 not that often?

25. HOW MUCH TIME DOES _____ WATCH TELEVISION?
(Child's Name)

Would you say: 59.4 about 2 hours a day or more
or: 26.9 every day but not for two hours
or: 13.7 several times a week or less?

26. HOW OFTEN DOES _____ CALL ONE OF HIS (HER) FRIENDS ON THE TELEPHONE TO TALK?
(Child's Name)

Would you say: 6.5 once a day or more
or: 11.3 a couple times a week
or: 82.1 not that often?

27. HOW OFTEN DOES _____ GO TO ONE OF HIS FRIEND'S HOUSE BY HIMSELF (HERSELF) TO VISIT?
(Child's Name)

Would you say: 31.4 almost every day
or: 13.1 a couple times a week
or: 55.4 not that often?

28. IF _____ IS TRYING TO DO SOMETHING DIFFICULT AND CAN'T SEEM TO DO IT HIMSELF (HERSELF), WHAT DO YOU USUALLY DO?
(Child's Name)

Do you: 24.1 help, whether he (she) asks for help or not
or: 39.4 help only if he (she) asks for it
or: 36.5 ask him (her) to try it another way himself (herself) before you actually help?

29. HOW MANY CHILDREN'S BOOKS ARE IN YOUR HOME THAT _____ CAN LOOK AT?
(Child's Name)

Would you say: 33.7 fifteen or more
or: 35.4 several, but not fifteen
or: 30.9 three or fewer

30. HOW OFTEN WOULD YOU SAY SOMEONE READS STORIES TO _____?
(Child's Name)

Would you say: 21.7 almost every day
or: 52.6 several times a week
or: 25.7 not that often?

31. HOW OFTEN DOES _____ CHOOSE HIS (HER) CLOTHES IN THE MORNING WITHOUT ANY HELP?
(Child's Name)

Would you say: 50.9 almost every day
or: 24.6 several times a week
or: 24.6 not that often?

32. HOW OFTEN DO YOU TALK WITH _____ ABOUT HIS (HER) FEELINGS TOWARDS THINGS, SUCH AS HIS (HER) FEARS, PEOPLE OR THINGS HE (SHE) ESPECIALLY LIKES, OR PEOPLE OR THINGS HE (SHE) ESPECIALLY DOESN'T LIKE?
(Child's Name)

Would you say: 37.1 almost every day
or: 32.6 several times a week
or: 30.3 not that often?

Part 2.

33. I AM GOING TO READ TO YOU A LIST OF THINGS CHILDREN CAN PLAY WITH. PLEASE TELL ME WHICH ONES _____ HAS A CHANCE TO PLAY WITH AT HOME. (Child's Name)

% Yes	Frequency Yes	Frequency No	
97.7	170	4	crayons and paper
83.3	145	29	sissors
73.6	128	46	scotch tape, paste, or stapler
73.0	127	47	large building toys, like blocks or cardboard boxes
56.9	99	75	jigsaw puzzles
52.3	91	83	games that children sit down to play, such as checkers
58.6	102	72	old adult clothes to play "dress up" in
89.1	155	19	cuddly toy such as a stuffed animal or soft doll
98.3	171	3	dolls or little cars and trucks
78.7	137	37	ride-on toys, such as trucks, wagons, baby strollers
55.7	97	77	musical instruments, either toy or real
81.6	142	32	picture catalogs to read or cut up, like Sears, Wards, other
50.0	87	87	record player and children's records
87.4	152	22	outdoor activity toys, such as swings, large boards, something to climb on, or a bicycle
62.1	108	66	paint or magic markers
52.9	92	82	clay or playdough
48.9	85	89	"put-together" toys like tinkertoys, Legos, pegboards, or beads for stringing
50.0	87	87	hammer and nails with some wood scraps
42.0	73	101	yarn, thread, and cloth scraps for knitting or sewing
56.3	98	76	sandbox or sandy area to build roads and houses
63.8	111	63	make believe toys out of milk cartons, tin cans, or egg cartons
63.8	111	63	pets, such as a dog, cat, fish, or bird
27.0	47	127	plants of his (her) own in a pot or garden

34. NOW I'M GOING TO READ A LIST OF THINGS CHILDREN SOMETIMES START TO LEARN WHEN THEY GET TO BE _____'S AGE; PLEASE TELL ME WHICH
(Child's Name)
OF THEM YOU ARE TRYING TO TEACH HIM (HER).

% Yes	Frequency Yes	Frequency No	
97.1	169	5	names of things around the house
93.7	163	11	nursery rhymes, prayers, or songs
97.7	170	4	colors
89.1	155	19	shapes, such as circles, squares, or triangles
71.3	124	50	to write his (her) name
69.0	120	54	to remember his (her) address and telephone number
98.3	171	3	to count things
78.2	136	38	to recognize numbers in books
87.4	152	22	to say the "abc's"
68.4	119	55	to recognize letters in books
50.6	88	86	to read words on signs or in books
38.5	67	107	to cook things
54.6	95	79	to build or sew things
87.9	153	21	ideas like "big-little", "up-down", "before-after", and so on
98.9	172	2	to name animals or objects in picture books

35. NEXT I'M GOING TO READ A LIST OF PLACES THAT CHILDREN SOMETIMES VISIT, AND THINGS THEY SOMETIMES DO; PLEASE TELL ME WHICH OF THEM _____ HAS DONE OR VISITED IN THE PAST TWELVE MONTHS.
(Child's Name)

% Yes	Frequency Yes	Frequency No	
62.9	110	65	visited relatives or friends in another town
84.6	148	27	seen animals in a farm or zoo
45.1	79	96	visited an airport, train station, or bus station
37.1	65	110	gone riding on an airplane, train, or bus
22.3	39	136	visited a history, science, or art museum
33.7	59	116	gone on a family vacation for several days or more
74.9	131	44	eaten in a restaurant
29.1	51	124	visited a library to take out books
73.7	129	46	gone picnicing or swimming
39.4	69	106	gone fishing or hunting
35.4	62	113	gone to a baseball game, football game, or other sports event
62.9	110	65	gone to a movie
31.4	55	120	gone to a play, music concert, or stage show
23.0	40	134	visited a company to watch them make or fix things
36.6	64	111	visited you or some other adult from your household while working at a paying job

36. LASTLY, I'M GOING TO READ A LIST OF HOUSEHOLD TASKS THAT CHILDREN SOMETIMES HELP WITH. PLEASE TELL ME WHICH OF THEM _____ HAS
(Child's Name)
HELPED YOU WITH IN THE LAST MONTH.

% Yes	Frequency Yes	Frequency No	
40.0	70	105	clean or peel food for a meal
38.3	67	108	mix and bake things, like cookies
33.7	59	116	stir things while they cook, like soup, pudding, or jello
70.9	124	51	find food on shelves at the grocery store for you
52.6	92	83	set the table for meals
73.7	129	46	take off the dishes after meals
36.6	64	111	wash the dishes
31.4	55	120	sort the laundry into different piles for washing
62.9	110	65	fold washed clothes
76.0	133	42	put clean clothes into the right drawers or shelves
67.4	118	57	sweep a room
23.4	41	134	use a vacuum cleaner to clean floors
49.1	86	89	wash a bathroom sink or tub with cleanser and a sponge
45.7	80	95	plant seeds in a garden, or pick fruits or vegetables
53.8	93	80	answer telephone calls and give you the message
80.5	140	34	brush your or another family member's hair

Be sure to record time finished.

Table IV-1 (cont.)

HIGH/SCOPE HOME ENVIRONMENT SCALE OBSERVATIONS

Child's Name_____ Date_____
First Last

Tester_____

Focal Parent's Name_____

Community/City_____ State_____

This section is to be filled out by the community interviewer after completing the second visit (or whenever the Home Environment Scale is administered). Check the box that indicates how often you observed each of the behaviors listed during that visit. This form should be completed immediately after leaving the home so that it can be done as accurately as possible. Items 4, 5, and 6 refer only to mother's behavior during actual testing; all other items refer to events observed at any time during the visits.

	1 Never observed %	2 Observed once or twice %	3 Observed three or more times %
1. Mother praised the child for something he (she) did.	44.5	42.8	12.7
2. Mother scolded child.	63.4	27.3	9.3
3. Mother held child in her lap.	66.9	29.7	3.5
4. Mother interfered with testing by making negative or critical comments to the child or to the tester (e.g., "why can't you do that?")	72.4	21.3	6.3
5. Mother interfered with testing by coaching the child or by giving answers to the child.	63.8	28.2	8.0
6. Mother made encouraging comments to the child during testing.	49.4	43.7	6.9
7. Mother asked child about his (her) opinion or feelings during the visit.	93.1	6.9	0
8. Examples of the child's art work were displayed in the home.	81.0	16.7	2.3
9. Mother expressed interest in the child's performance or general development (e.g., by asking how the child is doing).	53.8	35.3	11.0
10. Mother threatened child with later punishment.	89.7	8.0	2.3
. Mother talked proudly about the child's accomplishments.	47.1	44.3	8.6

HIGH/SCOPE HOME ENVIRONMENT SCALE
ITEM INTERCORRELATIONS

(Item Ns range from 164 to 177)

Items[2]	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
2	-06																																													
3	11	04																																													
4	09	-02	30																																											
5	18	-09	02	03																																										
6	-11	-06	12	23	-01																																									
7	04	02	05	07	15	13																																								
8	-13	08	10	03	00	35	08																																							
9	00	06	39	09	07	12	08	20																																						
10	11	-14	17	22	18	07	-01	05	24																																					
11	01	-07	05	03	26	-02	12	-01	19	30																																				
12	09	-02	28	27	11	00	22	00	18	24	08																																			
13	-06	06	18	15	28	14	27	15	14	16	16	31																																		
14	07	01	-13	01	-03	05	-02	-01	-16	-10	00	03	00																																	
15	-02	09	-06	-16	06	-16	-01	-08	05	-05	15	-07	-03	-22																																
16	23	02	11	00	20	-11	00	01	13	13	18	-04	10	-04	08																															
17	00	04	-06	-05	-08	-08	02	-01	-05	-04	01	06	-07	04	02	-08																														
18	04	01	-15	-10	-07	-08	09	-18	00	04	-01	01	08	-01	07	-06	23																													
19	11	-01	15	10	-02	11	24	00	10	23	03	21	18	-02	-10	10	13	08																												
20	-06	-16	-02	-16	-02	-09	10	-07	00	-01	-12	-15	-07	-06	-01	03	01	07	-03																											
21	12	-07	19	21	16	19	10	11	18	29	-03	20	20	04	-15	01	-05	-03	07	-09																									
22	07	05	14	11	03	04	16	09	18	-03	-06	04	04	-10	02	11	02	-18	07	-07	10																								
23	-07	04	26	22	07	22	12	19	35	24	08	24	31	02	-01	08	08	00	08	-05	28	08																							
24	15	-04	24	22	08	05	-03	06	26	17	05	19	20	-13	-02	10	05	-02	12	-11	15	19	45																						
25	00	00	14	02	09	10	11	20	05	-02	02	08	07	-01	-05	-03	20	-06	13	-07	-03	-11	01	00																				
26	17	08	24	10	08	-05	-11	05	08	13	01	15	17	-07	-01	05	10	-10	-01	-05	06	03	09	13	03																		
27	45	03	03	00	14	-08	04	-16	11	05	14	06	-01	05	02	26	-08	10	04	-01	-06	-10	03	04	-11	04																	
28	00	-13	05	-14	06	-05	08	-02	15	04	17	06	09	-06	00	00	-06	-03	-02	-06	06	-12	-05	-01	07	-08	-03																
29	09	05	20	17	01	14	06	04	13	26	00	16	09	-10	-02	06	-13	01	19	-05	18	12	26	21	10	05	11	-17															
30	-10	-01	19	12	07	18	00	23	19	29	04	19	14	-03	00	00	-03	-03	14	-08	24	11	24	21	20	04	-03	-02	42														
31	12	-16	21	16	13	09	05	00	10	25	13	15	20	-06	06	11	06	08	29	04	18	18	18	21	08	15	04	02	19	20													
32	08	06	13	09	14	00	16	-11	13	15	05	17	28	00	10	07	25	13	24	-07	21	11	29	18	06	09	-01	00	07	09	20												
33	04	-13	-14	-21	01	-01	-07	-12	-13	-16	-06	-11	-12	07	-13	-03	02	07	-20	10	-13	-19	-16	-27	-02	01	11	18	-29	-29	-17	-07											
34	-09	00	-12	-19	-02	08	01	02	-11	-20	-09	-21	-25	-10	12	03	-09	10	-12	11	-21	-06	-29	-31	-09	-15	-02	17	-11	-22	-24	-21	46										
35	-19	-15	-30	-10	-13	01	-20	-04	-29	-23	-09	-25	-15	04	14	-08	11	06	-12	-03	-15	-08	-32	-29	03	-15	-16	01	-29	-14	-14	-18	25	23									
36	-14	-08	-35	-40	-11	-03	-18	-05	-24	-28	-09	-22	-29	-08	14	-04	01	09	-27	07	-41	-15	-22	-24	04	-22	-04	14	-29	-23	-26	-23	50	51	40								
37	-07	00	-08	04	-06	07	-21	11	-11	-06	-15	-17	-13	05	08	-17	20	-06	-19	06	08	03	-05	-11	03	-02	-17	00	-11	-01	-04	-10	09	06	11	19							
38	-13	07	09	09	-10	13	-15	14	07	11	-09	03	01	-12	-02	05	-10	-03	04	-10	15	01	07	07	06	03	-11	-08	10	14	-07	-12	-06	-02	05	-02	14						
39	08	-04	-18	-02	-20	00	-06	02	-22	-17	-15	-23	-15	08	-12	03	08	-11	-01	09	-09	07	-15	-16	-05	07	-08	-06	14	-09	-01	-10	14	04	20	12	26	-04					
40	-12	11	05	07	-17	15	07	12	-08	02	-01	-08	12	-04	-03	02	-10	-01	06	-02	00	-15	05	02	05	07	-09	00	12	09	-13	-03	-10	-01	07	-05	-06	44	02				
41	-02	15	19	13	-10	11	-02	05	04	02	-01	00	04	-10	-04	02	-07	07	05	-02	-03	-19	08	07	06	13	02	-05	12	05	-16	-01	-03	06	04	-08	-12	41	05	59			
42	-05	14	02	09	-05	03	-13	09	-09	-06	-06	-10	-03	08	03	-12	-01	-07	-13	07	03	-17	-02	-04	04	06	-15	-06	-07	07	-05	-14	00	-03	10	12	42	23	23	17	21		
43	-06	06	-08	-14	-16	-06	-13	-04	-13	-04	-03	-17	-21	-06	21	-17	11	13	02	-06	-19	-14	-12	-22	-04	-09	-05	08	-11	-11	-06	-03	14	18	15	25	19	-05	-06	00	03	08	
44	02	-08	-13	-09	09	02	-02	-04	-07	-09	00	-16	-08	00	-05	03	00	01	-05	05	-04	06	-14	-13	-19	-01	03	-01	-16	-09	-08	02	19	17	10	16	20	-03	07	-09	-09	-07	12
45	-05	-07	-11	-15	-13	-07	-13	04	-09	-06	-12	-22	-21	-02	05	00	10	-01	-07	09	08	-02	-09	-11	-04	-07	-13	04	-13	-08	-09	-06	-01	08	09	10	38	10	20	09	01	31	14
46	03	06	18	17	-03	25	-01	17	06	14	-10	10	-01	01	-14	-11	01	-14	19	-15	07	-09	07	10	17	11	-12	-05	24	17	-03	-06	-13	-05	-05	-11	08	49	00	35	24	13	-09
47	-02	-04	-21	-10	-06	-05	-09	04	-19	-07	-12	-29	-18	05	05	-07	05	-06	-20	11	04	-08	-12	-25	00	-06	-13	07	-19	-18	-09	-12	17	11	20	22	65	04	33	-08	-14	33	23

[1] A missing data intercorrelation computer program was used.

[2] Item numbers correspond to items in Table IV-4

Table IV-3

HIGH/SCOPE HOME ENVIRONMENT SCALE
ROTATED FACTOR LOADINGS[1]
Seventeen Factors Extracted
(Item Ns range from 164 to 177)

Item[2]	FI	FII	FIII	FIV	FV	FVI	FVII	FVIII	FIX	FX	FXI	FXII	FXIII	FXIV	FXV	FXVI	FXVII	h^2
1	04	-08	05	04	80	04	05	07	-06	04	-03	-01	-09	-08	08	-11	15	73
2	12	12	01	-01	03	06	-12	00	77	01	-08	03	-10	-06	-01	-06	-01	67
3	12	11	-08	00	07	-07	-06	07	-04	13	-61	04	00	-07	33	-29	09	64
4	23	10	00	06	04	-06	09	07	-09	-08	-08	08	-16	02	69	-12	08	64
5	-03	-17	-01	72	20	09	-10	-02	-09	01	03	12	-09	-03	-11	-15	-11	68
6	-26	15	00	05	-19	-01	31	14	-02	03	-11	34	-06	-05	45	15	-30	69
7	03	-03	-16	43	02	16	05	14	16	12	-12	-05	26	-46	18	33	02	73
8	-08	08	13	08	-26	-11	22	20	18	26	-26	25	-01	02	04	01	-42	62
9	05	-01	-10	03	02	04	-03	09	-01	00	-75	08	-01	09	-03	00	-17	63
10	26	08	01	16	08	06	-02	-24	-46	-14	-27	32	-07	-07	04	-12	-18	63
11	17	-06	-13	24	11	-04	-21	-26	-18	-01	-12	-13	-15	-06	-01	00	-59	66
12	13	-06	-25	31	02	14	05	-13	-07	18	-26	06	-19	-02	26	-10	32	54
13	15	10	-17	65	-13	20	01	-01	03	04	-11	-04	07	06	25	-04	-13	64
14	14	-16	08	02	14	05	55	-23	17	03	26	-08	-12	08	10	16	-15	60
15	-02	-06	08	05	00	07	-79	01	13	00	06	04	-06	05	-05	06	-11	69
16	04	15	-08	17	51	-03	-14	30	-10	-03	-07	-06	09	12	-18	00	-36	63
17	01	-12	13	-15	-07	70	06	02	02	28	07	-07	-05	01	-12	-19	-03	69
18	-16	04	-10	-02	08	56	13	-33	-02	-16	10	10	18	04	-03	21	12	62
19	23	15	-19	-07	13	39	07	14	-23	16	-07	14	00	-47	12	08	-07	66
20	-08	-06	10	-01	-05	-04	01	-07	-13	-05	-05	01	83	-06	-15	-04	07	77
21	22	06	24	39	00	08	22	08	-22	-16	-25	19	-15	07	15	16	22	61
22	11	-18	-03	02	-02	02	-11	77	05	-10	-12	08	-06	-01	10	01	05	70
23	13	04	-03	18	-06	33	11	02	06	-05	-46	22	03	43	23	06	-15	70
24	24	08	-15	04	10	20	-03	22	-12	03	-35	12	-09	48	09	-05	05	59
25	-05	02	01	10	-04	09	04	-04	-01	79	-03	15	-06	-11	-06	-07	-05	70
26	09	10	00	11	08	07	00	01	03	05	-11	-05	05	06	09	-79	01	69
27	-09	-08	-17	00	75	00	02	-18	10	-13	-07	09	03	05	01	02	-10	69
28	-18	-02	06	16	-01	-08	-07	-15	-30	20	-38	-43	-19	-11	-10	26	01	68
29	19	12	-14	00	18	-03	-08	03	-01	04	-14	69	06	-03	13	06	12	64
30	21	06	-01	11	-10	01	-02	02	-13	22	-13	61	-05	12	04	05	-08	55
31	23	-18	-01	07	10	23	-19	12	-44	11	-06	20	13	-03	32	-11	-11	59
32	16	-04	-07	29	03	64	-07	11	01	-07	-13	-04	-07	-03	05	-04	05	57
33	-74	-06	06	03	12	03	17	-16	-09	-03	05	-27	05	04	-01	-11	06	73
34	-74	06	02	-08	02	-16	-16	03	05	-07	01	05	07	-21	-03	15	02	69
35	-34	12	09	-13	-21	02	-13	06	-19	07	56	-19	-15	10	05	08	-12	66
36	-72	-05	12	-17	-06	-04	-17	-06	00	12	23	-12	-01	16	-21	12	-05	76
37	-13	-08	82	-05	-12	04	-01	02	04	01	05	10	-06	05	06	-08	03	75
38	-03	71	16	02	-09	-08	00	08	-06	-01	-05	23	-19	10	-10	-04	10	68
39	-01	08	36	-21	15	00	17	31	-06	11	33	-25	26	01	17	-07	-09	63
40	07	82	-03	01	-10	-01	01	-07	09	03	04	-02	07	-05	05	06	-09	72
41	-04	78	-08	-05	05	02	-05	-15	14	01	-07	-04	09	03	15	-10	-03	72
42	07	24	61	02	-03	-14	-09	-22	17	19	09	-02	13	18	23	-04	01	68
43	-21	-07	23	-39	-10	18	-32	-31	09	-14	-02	-01	-20	-31	06	01	-11	67
44	-31	-07	21	11	-01	09	14	18	-03	-50	09	02	-08	-26	-21	-22	-15	66
45	09	16	64	-16	-01	04	-03	07	-08	-02	-04	-13	07	-02	-25	19	05	60
46	03	51	09	-04	-03	-05	24	03	-04	22	-07	34	-27	-18	-01	-14	12	65
47	-14	-09	81	-01	-03	-03	02	00	00	-07	12	-08	03	-11	-06	02	-03	72
PCT. V	06	05	06	04	04	04	04	03	03	03	05	04	03	03	03	03	03	

Seventeen factors accounted for 66.5% of the total variance.

Table IV-4

HIGH/SCOPE HOME ENVIRONMENT SCALE
ITEMS LOADING HIGHEST
(SEVENTEEN FACTORS EXTRACTED)

(Item Ns range from 164 to 177)

		Loading
FACTOR I	(5.7%)	
33.	Total number of child's playthings	-.74
34.	Total number of things mother trying to teach child	-.74
36.	Total number of household tasks child helped with in last month	-.72
35.	Total number of places child visited in past twelve months	-.34*
44.	Child's art displayed in home	-.31*
FACTOR II	(5.3%)	
40.	Mother criticized child during testing	.82
41.	Mother coached child during testing	.78
38.	Mother scolded child during visits	.71
46.	Mother threatened child during visits	.51*
FACTOR III	(6.0%)	
37.	Mother praised child during visits	.82
47.	Mother talked proudly of child during visits	.81
45.	Mother asked about child's progress during visits	.64
42.	Mother encouraged child during testing	.61
39.	Mother held child in lap during visits	.36*
FACTOR IV	(4.2%)	
5.	Child has own money to spend	.72
13.	Mother and child talk about child's activities	.65
7.	Child has toys of his very own	.43*
21.	Child helps with household tasks	.39
43.	Mother asked child about feelings during visit	-.39*
12.	Mother spends time alone with child	.31*
FACTOR V	(4.1%)	
1.	Child plays with friends of the same age	.80
27.	Child goes to friend's house alone	.75

(Continued)

Table IV-4 (cont.)

HIGH/SCOPE HOME ENVIRONMENT SCALE
ITEMS LOADING HIGHEST
(SEVENTEEN FACTORS EXTRACTED)

(Item Ns range from 164 to 177)

(Continued)

		Loading
FACTOR VI	(3.9%)	
17.	Mother punishes child by taking away belongings	.70
32.	Mother talks with child about child's feelings	.64
18.	Mother uses physical punishment	.56*
19.	Mother explains punishment	.39*
23.	Mother joins child's play activities	.33*
FACTOR VII	(3.5%)	
15.	Child plays in messy places	-.79
14.	Areas child can play in house	.55
43.	Mother asked child about feelings during visit	-.32*
6.	Child goes to bed same time every night	.31*
FACTOR VIII	(3.4%)	
22.	Child can play with mother's pots and pans, shoes and hats	.77
18.	Mother uses physical punishment	-.33*
39.	Mother held child in lap during visit	.31*
16.	Nearby outdoor places where child can play	.30*
FACTOR IX	(3.3%)	
2.	Child slept overnight at a friend's house	.77
10.	Mother praises child	-.46*
31.	Child chooses clothes alone in the morning	-.44*
28.	Mother helps child with difficult tasks	-.30*
FACTOR X	(3.2%)	
25.	Child watches television	.79
44.	Child's art displayed in home	-.50*

(Continued)

Table IV-4 (cont.)

HIGH/SCOPE HOME ENVIRONMENT SCALE
ITEMS LOADING HIGHEST
(SEVENTEEN FACTORS EXTRACTED)

(Item Ns range from 164 to 177)

(Continued)

		Loading
FACTOR XI	(5.2%)	
9.	Mother holds child in lap	-.75
3.	Child chooses food at store	-.61*
35.	Total number of places visited in past twelve months	.56*
23.	Mother joins child's play activities	-.46*
28.	Mother helps child with difficult tasks	-.38*
24.	Mother plays make believe games with child	-.35*
39.	Mother held child in lap during visit	.33*
FACTOR XII	(4.2%)	
29.	Number of children's books at home	.69
30.	Someone reads stories to child	.61
28.	Mother helps child with difficult tasks	-.43*
7.	Child has toys of his very own	.34*
46.	Mother threatened child during visits	.34*
10.	Mother praises child	.32*
FACTOR XIII	(2.9%)	
20.	Mother allows child to talk back without punishment	.83
FACTOR XIV	(2.8%)	
24.	Mother plays make believe games with child	.48
19.	Mother explains punishment	-.47*
7.	Child has toys of his very own	-.46*
23.	Mother joins child's play activities	.43*
43.	Mother asked child about feelings during visit	-.31*
FACTOR XV	(3.4%)	
4.	Child picks out own clothes at store	.69
6.	Child goes to bed same time every night	.45*
3.	Child chooses food at store	.33*
31.	Child chooses clothes alone in the morning	.32*

(Continued)

Table IV-4 (cont.)

HIGH/SCOPE HOME ENVIRONMENT SCALE
ITEMS LOADING HIGHEST
(SEVENTEEN FACTORS EXTRACTED)

(Item Ns range from 164 to 177)

(Continued)

		Loading
FACTOR XVI	(2.9%)	
26.	Child calls friends on telephone ----------	-.79
7.	Child has toys of his very own ----------	.33*
FACTOR XVII	(2.7%)	
11.	Mother rewards child for being good or helping ----------	-.59
8.	Child eats meals same time every day --------	-.42
16.	Nearby outdoor places where child can play --	-.36*
12.	Mother spends time alone with child ---------	.32*
6.	Child goes to bed same time every night -----	-.30*

Seventeen factors accounted for 66.5% of the total variance.

*Item also shows substantial loading on another factor.

Table IV-5

HIGH/SCOPE HOME ENVIRONMENT SCALE
REVISED ROTATED FACTOR LOADINGS[1]
FOUR FACTORS SPECIFIED

(Item Ns range from 175 to 177)

Item[2]	FI	FII	FIII	FIV	h^2
1	25	12	-48	-10	32
2	-02	22	-52	14	34
3	14	-10	-74	13	60
4	13	11	-56	13	36
5	23	-04	-56	-13	38
6	00	59	17	33	48
7	01	42	04	39	33
8	17	09	14	65	48
9	-23	33	-24	42	40
10	11	06	-16	66	48
11	03	-15	-16	59	40
12	41	37	-16	07	34
13	26	54	-18	-15	41
14	71	09	-09	07	52
15	62	-11	-04	09	40
16	73	25	-10	01	61
17	67	15	-22	09	52
18	07	52	-17	16	33
19	-09	29	-55	31	49
20	23	29	-12	29	23
21	-12	50	-36	-03	39
22	09	48	-07	00	24
23	06	54	-02	-04	30
PCT. V	10.8	10.7	10.6	8.6	

Four factors accounted for 40.7% of the total variance.

[1]Principal components factor analysis followed by a varimax rotation.

[2]Item numbers correspond to items in Table IV-7.

Table IV-6

HIGH/SCOPE HOME ENVIRONMENT SCALE
ITEMS LOADING ON EACH FACTOR
(FOUR FACTORS SPECIFIED)

(Item Ns range from 175 to 177)

		Loading
FACTOR I	(10.6%)	
16.	Mother teaches child to recognize letters ---	.73
14.	Mother teaches child to recognize numbers ---	.71
17.	Mother teaches child to read words ----------	.67
15.	Mother teaches child to say the "ABC's" -----	.62
12.	Mother teaches child to write name ----------	.41*
FACTOR II	(10.8%)	
6.	Child can play with scissors ----------	.59*
23.	Child helps mother by putting clean clothes in drawers ----------	.54
13.	Mother teaches child to remember address ----	.54
18.	Child helps mother clean and peel food ------	.52
21.	Child helps mother find food on shelves in store ----------	.50*
22.	Child helps mother take off dishes after meals ----------	.48
7.	Child can play with scotch tape, paste, or stapler ----------	.42*
12.	Mother teaches child to write name ----------	.37*
9.	Child can play with paint or magic markers --	.33*
FACTOR III	(10.7%)	
3.	Mother joins child's play activities --------	-.74
4.	Mother plays make believe games with child --	-.56
5.	Mother talks with child about child's feelings ----------	-.56
19.	Child helps mother mix and bake things ------	-.55*
2.	Child helps with household tasks ----------	-.52
1.	Mother and child talk about child's activities ----------	-.48
21.	Child helps mother find food on shelves in store ----------	-.40*

(Continued)

Table IV-6 (cont.)

HIGH/SCOPE HOME ENVIRONMENT SCALE
ITEMS LOADING ON EACH FACTOR
(FOUR FACTORS SPECIFIED)

(Item Ns range from 175 to 177)

(Continued)

		Loading
FACTOR IV	(8.6%)	
10.	Child can play with clay or play dough ------	.66
8.	Child can play with jigsaw puzzles ----------	.65
11.	Child can play with "put-together" toys -----	.59
9.	Child can play with paint or magic markers --	.42*
7.	Child can play with scotch tape, paste, or stapler ----------	.39*
6.	Child can play with scissors ----------	.33*
19.	Child helps mother mix and bake things ------	.31*

Four factors accounted for 40.7% of the total variance.

*Item also shows substantial loading on another factor.

Table IV-7

HIGH/SCOPE HOME ENVIRONMENT SCALE
ITEMS SCORED FOR EACH SCALE

HES #1 - Warm mother and child involvement

13. Mother and child talk about child's activities
21. Child helps with household tasks
23. Mother joins child's play activities
24. Mother plays make-believe games with child
32. Mother talks with child about child's feelings

HES #2 - Playthings

33 - 2. Child can play with scissors
33 - 3. Child can play with scotch tape, paste, or staple
33 - 5. Child can play with jigsaw puzzles
33 - 15. Child can play with paint or magic markers
33 - 16. Child can play with clay or play-dough
33 - 17. Child can play with "put-together" toys

HES #3 - Mother teaches child

34 - 5. Mother teaches child to write name
34 - 6. Mother teaches child to remember address
34 - 8. Mother teaches child to recognize numbers
34 - 9. Mother teaches child to say the "ABC's"
34 - 10. Mother teaches child to recognize letters
34 - 11. Mother teaches child to read words

HES #4 - Child does household tasks

36 - 1. Child helps mother clean and peel food
36 - 2. Child helps mother mix and bake things
36 - 3. Child helps mother stir foods
36 - 4. Child helps mother find food on shelves in store
36 - 6. Child helps mother take off dishes after meal
36 - 10. Child helps mother by putting clean clothes in drawers

HES #5 - Books and time reads

29. Number of children's books at home
30. Someone reads stories to child

HES #6 - Television in home

25. Child watches television

(Continued)

Table IV-7

HIGH/SCOPE HOME ENVIRONMENT SCALE
ITEMS SCORED FOR EACH SCALE

(Continued)

HES - Observations: Supportive

1. Mother praised child during visits
3. Mother held child in lap during testing
6. Mother encouraged child during testing
9. Mother asked about child's progress during visits
11. Mother talked proudly about child

HES - Observations: Punitive

2. Mother scolded child during visits
4. Mother criticized child during testing
5. Mother coached child during testing
10. Mother threatened child during visits

Table IV-8

HIGH/SCOPE HOME ENVIRONMENT SCALE
WHOLE SCORE DESCRIPTIVE STATISTICS
(N=177)

Scale	Number of Items	Alpha Coefficient	Mean*	Possible Score Range	S.D.	S.E.
HES # 1 Mother Involvement	5[1]	.64	10.05	5-15	2.51	.19
HES # 2 Playthings	6[2]	.65	8.21	6-12	-1.63	.12
HES # 3 Mother Teaches	6[3]	.75	7.78	6-12	-1.72	.13
HES # 4 Household Tasks	6[4]	.62	8.68	6-12	-1.63	.12
HES # 5 Watches Television	1[5]	NA	1.53	1- 3	.72	.05
HES # 6 Books and Adult	2[6]	.59	4.00	2- 6	1.26	.09
HES Observation:						
Supportive interactions	5[7]	.78	7.77	5-15	2.22	.17
Punitive interactions	4[8]	.77	5.34	4-12	1.74	.13

*For all scales except supportive interaction a numerically low score is favorable; for supportive interaction, a numerically high score is favorable.

[1]Includes items 13, 21, 23, 24, 32
[2]Includes items 33-2, 33-3, 33-5, 33-15, 33-16, 33-17
[3]Includes items 34-5, 34-6, 34-8, 34-9, 34-10, 34-11
[4]Includes items 36-1, 36-2, 36-3, 36-4, 36-6, 36-10
[5]Item 25
[6]Includes items 29, 30
[7]Includes observation items 1, 3, 6, 9, 11
[8]Includes observation items 2, 4, 5, 10

PARENT INTERVIEW RESPONSE DISTRIBUTIONS[1]
(PERCENTS)

I'D LIKE TO ASK YOU SOME QUESTIONS ABOUT YOU AND YOUR FAMILY. THE FIRST QUESTIONS ARE ABOUT YOUR CHILDREN.

1. **WHEN WAS _____ BORN?** (Child's Name) _____/ ___ / ____ month day year

2. **WHAT SHOTS HAS _____ HAD?** (Child's Name)

		yes	no	don't know
N=179	HAS HE (SHE) HAD DPT SHOTS?	94.4	2.8	2.8
N=178	HAS HE (SHE) HAD POLIO SHOTS?	95.5	2.2	2.2
N=178	HAS HE (SHE) HAD MEASLES SHOTS?	84.3	12.4	3.4

3. **WHEN WAS THE LAST TIME _____ SAW A DOCTOR?** (Child's Name)

N=166 Write in date: _____ / ____ mean time = 4.8 months
month year

4. **WAS THIS LAST VISIT FOR A CHECK-UP, OR FOR SOMETHING WRONG?**

N=178 56.7 check-up

43.3 something wrong

5. **WHEN ARRANGING FOR THIS VISIT, OR WHEN MAKING IT, DID YOU HAVE HELP FROM ANYONE OUTSIDE YOUR FAMILY?**

N=178 51.7 No

98.3 Yes Ask:

6. **WHO HELPED YOU?** Home Visitor: 85.9 Other: 14.1

If you're not sure if the person is from Home Start, ask:

7. **IS HE (SHE) FROM HOME START?**

___No

___Yes

8. **WAS SOMEONE FROM HOME START INVOLVED IN ANY WAY?**

___No

___Yes

[1] See text for a more complete explanation of interview responses.

Table IV-9
PARENT INTERVIEW RESPONSE DISTRIBUTIONS
(PERCENTS)
(Continued)

9. WHEN WAS THE LAST TIME _____ WENT TO THE DENTIST?
N=138 (Child's Name)

Write in date ____/____ mean time = 3.8 months
month year

10. WAS THIS LAST VISIT FOR A CHECK-UP OR FOR SOMETHING WRONG?
N=145

68.3 check-up

31.7 something wrong

11. WHEN ARRANGING FOR THIS VISIT, OR WHEN MAKING IT, DID YOU HAVE HELP FROM ANYONE OUTSIDE YOUR FAMILY?
N=147

12.9 No

87.1 Yes Ask:

N=128 12. WHO HELPED YOU? Home Visitor: 99.2
Other: .8

If you're not sure if the person is from Home Start, ask:

13. IS HE (SHE) FROM HOME START?

___No

___Yes Ask:

14. WAS SOMEONE FROM HOME START INVOLVED IN ANY WAY?

___No

___Yes

15. HOW MANY BROTHERS AND SISTERS DOES _____ (Child's Name) HAVE LIVING AT HOME?

___None

___Write in number and say:

16. I'D LIKE TO KNOW THEIR AGES. PLEASE START WITH YOUR YOUNGEST CHILD AND TELL ME HOW OLD EACH BROTHER OR SISTER IS. Circle whether brother or sister and write in age.

1. Brother	Sister	___years	6. Brother	Sister	___years
2. Brother	Sister	___years	7. Brother	Sister	___years
3. Brother	Sister	___years	8. Brother	Sister	___years
4. Brother	Sister	___years	9. Brother	Sister	___years
5. Brother	Sister	___years	10. Brother	Sister	___years

Note: If you already know the answer to No. 17, check it but do not ask.

17. ARE YOU _____'S: (Child's Name)

N=179

94.4 MOTHER?

.6 FATHER?

--- OLDER SISTER (OR BROTHER)?

5.0 GRANDMOTHER, AUNT OR OTHER RELATIVE?

--- BABYSITTER, NEIGHBOR, OR FRIEND?

18. WHEN WERE YOU BORN? ____ / ___ / ____ (month / day / year)

N=176

mean age = 32.2 years

Table IV-9
PARENT INTERVIEW RESPONSE DISTRIBUTIONS
(PERCENTS)
(Continued)

19. DO YOU NOW HAVE A PAYING JOB?

N=179

81.0 No

19.0 Yes Ask:

N= 35

20. IS IT FULL TIME, REGULAR PART TIME, OR OCCASIONAL PART TIME?

62.9 Full time

25.7 Regular part time

11.4 Occasional part time

21. WHAT KIND OF WORK DO YOU DO?_____

If answer is not specific, say:

CAN YOU TELL ME MORE ABOUT WHAT YOU DO?_____

22. WHAT IS THE HIGHEST GRADE YOU COMPLETED IN SCHOOL?

N=179

(Circle number that applies)

Grade school	1	2	3	4	5	6	7	8
High school	9	10	11	12				
College	13	14	15	16				
Graduate work	16+							

Grade	%
1-4	4.0
5-7	12.2
8	16.2
9	11.7
10	11.2
11	15.1
12	27.4
13	1.1
14-16	1.2

23. DOES ANYONE ELSE IN YOUR FAMILY EARN AN INCOME THAT IS USED TO SUPPORT THE FAMILY?

N=178

42.7 No

57.3 Yes Ask:

24. WHO?_____

If more than one person is named, ask:

WHO CONTRIBUTES THE MOST?_____

I WOULD LIKE TO ASK A COUPLE OF QUESTIONS ABOUT HIM (HER).

N=101

25. IS HIS (HER) JOB FULL TIME, REGULAR PART TIME, OR OCCASIONAL PART TIME?

89.1 Full time

6.9 Regular part time

4.0 Occasional part time

26. WHAT KIND OF WORK DOES HE (SHE) DO?

If answer is not specific, say:

CAN YOU TELL ME MORE ABOUT WHAT HE (SHE) DOES?_____

_____

_____

N= 97

27. WHAT IS THE HIGHEST GRADE HE (SHE) HAS COMPLETED IN SCHOOL?

(Circle number that applies)

Grade school	1	2	3	4	5	6	7	8
High school	9	10	11	12				
College	13	14	15	16				
Graduate work	16+							

Grade	%
1-4	6.2
5-7	19.6
8	15.5
9-11	29.9
12	23.7
13-14	5.2

Table IV-9
PARENT INTERVIEW RESPONSE DISTRIBUTIONS
(PERCENTS)
(Continued)

28. WHAT LANGUAGE DO YOU AND YOUR FAMILY USUALLY SPEAK AT HOME?____
N=179

English:	96.6
Spanish:	3.4

29. WHEN DID _____ FIRST ENTER THE HOME START PROGRAM?
(Child's Name)
N=168

____/____ mean length of time = 10.4 months
month year

30. WAS _____ IN A PRESCHOOL OR HEAD START PROGRAM BEFORE
(Child's Name)
N=179 ENTERING HOME START?

93.9 No

6.1 Yes Ask:

31. FOR HOW LONG? ____months

N= 11

Months	%
1	18.2
2	27.3
8	9.1
12	45.5

32. IS _____ NOW IN A PRESCHOOL OR HEAD START PROGRAM?
(Child's Name)
N=178

93.3 No

6.7 Yes

33. WE'D LIKE TO FIND OUT WHAT THINGS PEOPLE LIKE ABOUT HOME START. WHAT HOME START ACTIVITIES SEEM TO BE ESPECIALLY INTERESTING TO _____ ?
(Child's Name)

List as many as parent mentions:

(see text)

PARENT INTERVIEW RESPONSE DISTRIBUTIONS
(PERCENTS)
(Continued)

34. ARE THERE SOME THINGS _____ DOESN'T SEEM TO LIKE ABOUT HOME
(Child's Name)
N=177 START?

85.9 No

14.1 Yes Ask:

35. WHAT ARE THEY? _____

(see text)

36. WHAT DOES YOUR HOME VISITOR DO WITH _____ THAT YOU FEEL IS
(Child's Name)
ESPECIALLY GOOD FOR HIM (HER)?

(see text)

37. HOW DO YOU THINK _____ WILL BENEFIT FROM HOME START OVER
(Child's Name)
THE NEXT YEAR?

(see text)

38. WHAT HOME START ACTIVITIES ARE ESPECIALLY INTERESTING TO YOU?

(see text)

39. HOW DO YOU THINK YOU MIGHT BENEFIT FROM HOME START OVER THE NEXT YEAR?

(see text)

Table IV-9
PARENT INTERVIEW RESPONSE DISTRIBUTIONS
(PERCENTS)
(Continued)

40. OVERALL, WHAT WOULD YOU SAY IS THE MOST IMPORTANT THING ABOUT HOME START FOR YOU AND YOUR FAMILY?

(see text)

41. N=176 ARE THERE ANY CHANGES YOU WOULD LIKE TO SEE IN HOME START TO MAKE IT BETTER FOR YOU AND YOUR FAMILY?

78.4 No

21.6 Yes Ask:

42. WHAT CHANGES WOULD YOU LIKE TO SEE?

(see text)

43. N=179 HAVE YOU HEARD OF A GROUP CALLED THE PARENT POLICY COUNCIL OR COMMITTEE? IT MAY ALSO BE CALLED A PARENT POLICY BOARD, OR PARENT ADVISORY COMMITTEE.

40.8 No

59.2 Yes Ask:

N=105 44. HAVE YOU EVER BEEN TO ONE OF THEIR MEETINGS?

39.0 No

61.0 Yes Ask:

45. WHAT KINDS OF THINGS ARE DISCUSSED AT THE MEETINGS?

(see text)

PARENT INTERVIEW RESPONSE DISTRIBUTIONS
(PERCENTS)
(Continued)

N= 74

46. ARE THERE THINGS YOU THINK SHOULD BE BROUGHT UP AT THE POLICY COUNCIL MEETINGS THAT HAVE NOT BEEN DISCUSSED?

74.3 No

25.7 Yes Ask:

47. WHAT? _____

(see text)

48. HAVE THERE BEEN GET-TOGETHERS FOR HOME START FAMILIES, SUCH AS SOCIAL HOURS, PICNICS, OR OTHER GATHERINGS?
N=178

6.2 No

93.8 Yes Ask:

N=168

49. DID YOU ATTEND?

19.6 No

80.4 Yes

50. NOW I'M GOING TO READ A LIST OF GROUPS AND ORGANIZATIONS OUTSIDE OF HOME START. TELL ME IF YOU OR YOUR HUSBAND ARE ACTIVE IN ANY OF THEM OR DO VOLUNTEER WORK FOR ANY OF THEM.
N=179

17.9 PARENT-TEACHERS ASSOCIATION?

11.7 BOY SCOUTS, GIRL SCOUTS, 4-H CLUB, OR OTHER YOUTH GROUPS?

34.1 CHURCH ORGANIZATIONS OR SOCIAL CLUBS?

1.1 HOSPITAL VOLUNTEER?

1.7 ANY POLITICAL ORGANIZATION?

8.4 OTHER? Write in: _____

41.3 NO GROUP OR ORGANIZATION.

N= 94

61.7 checked 1 group
30.9 checked 2 groups
6.4 checked 3 groups
1.1 checked 4 groups

PARENT INTERVIEW RESPONSE DISTRIBUTIONS
(PERCENTS)
(Continued)

51. ARE YOU TAKING ANY COURSES OR GOING TO SCHOOL?

N=179

98.3 No

1.7 Yes Ask:

N= 2

52. WHAT LEVEL OF EDUCATION?

50.0 ADULT EDUCATION?

50.0 HIGH SCHOOL?

___ COLLEGE COURSES?

53. NOW I'M GOING TO READ A LIST OF PLACES AND SERVICES THAT YOU MIGHT HAVE HEARD OF. FOR EACH ONE, I WANT YOU TO TELL ME IF YOU HAVE HEARD OF IT AND IF YOU ARE NOW USING IT. (Check appropriate box.)

If parent is now using it, ask:

DID HOME START ASSIST YOU IN USING IT?

Ns range from 178-179	Heard of it?		Now using it?		Did Home Start Assist?	
	No	Yes	No	Yes	No	Yes
WELFARE DEPARTMENT?		98.8		43.3		6.7
FOOD STAMPS?		99.4		40.2		5.6
MEDICAID?		82.7		24.6		2.8
FOOD COMMODITIES?		85.1		14.6		4.5
PUBLIC HOSPITAL?		97.2		42.4		5.0
PUBLIC HEALTH CLINIC?		96.7		66.4		23.5
MENTAL HEALTH CLINIC?		76.6		2.8		1.1
FAMILY COUNSELING AGENCIES?		69.9		3.9		1.7
PLANNED PARENTHOOD?		92.8		26.3		5.6
HEAD START PROGRAM?		96.2		16.8		9.5
DAY CARE OR CHILD CARE PROGRAM?		93.3		3.4		.6
RECREATIONAL PROGRAMS?		77.0		16.1		5.0
LEGAL AID?		77.3		14.1		1.7
HOUSING AUTHORITY?		82.2		22.9		3.4
STATE EMPLOYMENT OFFICE?		83.3		14.0		.6
JOB TRAINING PROGRAMS?		89.2		5.6		2.8

Table IV-10

8-BLOCK TASK
MEANS, SD'S, AND FREQUENCY DISTRIBUTIONS OF MOTHER-CHILD INTERACTION VARIABLES
(N=169)

Behavior	Mean	SD	Number of Responses									
			0-1	2-3	4-5	6-7	8-9	10-19	20-29	30-49	50-99	100+
MOTHER												
Move Blocks	11.31	11.63	31	17	14	17	11	47	19	12	1	0
Punish	.08	.44	168	0	1	0	0	0	0	0	0	0
Request Talk												
Height	2.04	3.78	108	31	12	4	8	4	2	0	0	0
Mark	3.07	3.97	86	33	21	11	5	10	2	1	0	0
Height & Mark	.73	1.64	143	18	4	2	1	0	0	0	0	0
Unclassified	13.40	14.37	30	18	15	10	13	43	18	17	5	0
Request Understanding												
Height	4.23	5.54	76	28	16	13	10	22	3	1	0	0
Mark	5.22	6.41	60	34	21	13	13	18	9	1	0	0
Height & Mark	2.37	5.43	118	17	10	9	6	5	1	3	0	0
Unclassified	16.60	15.25	11	12	18	8	21	47	22	22	8	0
Request Placement												
Height	1.95	3.51	114	27	10	5	6	7	0	0	0	0
Mark	1.64	2.92	116	28	8	9	3	5	0	0	0	0
Height & Mark	2.38	4.76	113	19	10	11	4	8	4	0	0	0
Unclassified	13.32	12.98	13	21	15	20	15	49	21	10	5	0
Talk About												
Height	6.67	8.21	41	30	31	18	10	26	9	3	1	0
Mark	6.95	9.27	55	24	18	14	17	29	7	3	2	0
Height & Mark	4.50	6.91	77	30	16	10	12	16	4	4	0	0
Unclassified	13.72	12.23	11	19	15	13	17	60	19	10	5	0
Future	.31	.65	159	10	0	0	0	0	0	0	0	0
Direct Request	8.83	10.97	42	35	10	19	10	33	9	9	2	0
Respond	.21	.71	161	6	2	0	0	0	0	0	0	0
Comments	.88	2.24	139	19	3	4	0	4	0	0	0	0
Task Irrelevancy	1.63	5.85	145	8	3	3	2	5	1	2	0	0
Praise	.65	1.70	148	11	5	3	0	0	0	0	0	0
Acknowledge	14.51	14.69	25	12	14	17	15	43	20	19	4	0

(Continued)

Table IV-10 (cont.)

8-BLOCK TASK
MEANS, SD'S, AND FREQUENCY DISTRIBUTIONS OF MOTHER-CHILD INTERACTION VARIABLES
(N=169)
(Continued)

Behavior	Mean	SD	Number of Responses									
			0-1	2-3	4-5	6-7	8-9	10-19	20-29	30-49	50-99	100
MOTHER												
Encourage	.04	.33	168	1	0	0	0	0	0	0	0	0
Correction Alone	7.14	10.36	39	46	19	20	13	15	9	7	1	0
Correction/Reason	.11	.41	165	4	0	0	0	0	0	0	0	0
Height	.48	1.06	150	14	4	1	0	0	0	0	0	0
Mark	.70	1.31	139	21	7	2	0	0	0	0	0	0
Height & Mark	.21	.56	161	8	0	0	0	0	0	0	0	0
Correction/Question	.17	.51	166	3	0	0	0	0	0	0	0	0
Height	.14	.41	169	0	0	0	0	0	0	0	0	0
Mark	.07	.27	169	0	0	0	0	0	0	0	0	0
Height & Mark	.02	.15	169	0	0	0	0	0	0	0	0	0
Threaten	.09	.67	166	2	0	1	0	0	0	0	0	0
Bribe	.08	.44	166	3	0	0	0	0	0	0	0	0
CHILD												
Talk About												
Height	8.18	9.06	50	18	16	17	12	34	17	5	0	0
Mark	10.91	11.84	41	16	17	9	14	45	9	17	1	0
Height & Mark	1.50	3.81	129	23	8	1	2	3	3	0	0	0
Unclassified	21.07	25.60	15	8	16	14	11	45	22	22	14	2
Direct Request	3.62	5.72	86	25	25	13	3	14	1	2	0	0
Respond	.34	.83	155	12	2	0	0	0	0	0	0	0
Comments	.96	2.31	138	17	10	1	1	2	0	0	0	0
Task Irrelevancy	2.31	8.06	134	10	9	4	1	7	1	2	1	0
Acknowledge	.03	.20	169	0	0	0	0	0	0	0	0	0
I don't know	.88	2.09	142	17	5	2	0	3	0	0	0	0
Refuse, Reject	.99	5.20	148	12	3	2	0	3	0	0	1	0
Move Blocks	26.75	19.50	7	1	5	5	8	45	42	30	26	0

Table IV-11

8-BLOCK TASK
PERCENT OF RESPONSES BY AGE
FINAL PLACEMENT OF SHORT O

Age (years)	N	Incorrect	One Dimension Matched	Correct
3	3	0.0	66.7	33.3
3½	21	9.5	33.3	57.1
4	28	0.0	46.4	53.6
4½	40	10.0	30.0	60.0
5	30	3.3	26.7	70.0
5½	26	3.8	26.9	69.2
6	15	6.7	6.7	86.7
6½	8	0.0	37.5	62.5
TOTAL	171	5.3	31.0	63.7

Table IV-12
8-BLOCK TASK
PERCENTAGE EXPLANATION OF PLACEMENT OF SHORT O

Age (years)	N	No Correct Verbalization	One Dimension Verbalized	Both Dimensions Verbalized	Child Refusal
3	3	33.3	33.3	0.0	33.3
3½	22	9.1	18.2	13.6	59.1
4	26	7.7	19.2	3.8	69.2
4½	39	7.7	28.2	20.5	43.6
5	27	3.7	29.6	25.9	40.7
5½	19	10.5	36.8	21.1	31.6
6	15	0.0	40.0	40.0	20.0
6½	7	0.0	57.1	42.9	0.0
TOTAL	158	7.0	29.1	20.3	43.7

Table IV-13

8-BLOCK TASK
PERCENT OF RESPONSES BY AGE
FINAL PLACEMENT OF TALL X

Age (years)	N	Incorrect	One Dimension Matched	Correct
3	3	33.3	33.3	33.3
3½	19	26.3	31.6	42.1
4	27	3.7	59.3	37.0
4½	41	2.4	36.6	61.0
5	30	10.0	40.0	50.0
5½	26	3.8	26.9	69.2
6	15	6.7	20.0	73.3
6½	8	0.0	25.0	75.0
TOTAL	169	7.7	36.7	55.6

Table IV-14
8-BLOCK TASK
PERCENTAGE EXPLANATION OF PLACEMENT OF TALL X

Age (years)	N	No Correct Verbalization	One Dimension Verbalized	Both Dimensions Verbalized	Child Refusa
3	3	33.3	0.0	0.0	66.7
3½	22	27.3	22.7	4.5	45.5
4	25	16.0	20.0	4.0	60.0
4½	39	12.8	23.1	25.6	38.5
5	27	11.1	22.2	29.6	37.0
5½	19	21.1	31.6	21.1	26.3
6	14	7.1	35.7	50.0	7.1
6½	7	0.0	71.4	28.6	0.0
TOTAL	156	15.4	26.3	21.2	37.2

8-BLOCK ITEM INTERCORRELATIONS[1]

(Item Ns range from 161 to 169)

Item[2]	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
2	-31																																						
3	13	12																																					
4	12	07	58																																				
5	12	-03	22	36																																			
6	25	07	40	52	40																																		
7	14	18	20	19	16	21																																	
8	21	25	11	22	17	14	47																																
9	21	17	06	17	21	03	40	45																															
10	29	36	-03	11	07	14	52	63	37																														
11	14	26	01	-16	-06	-24	31	22	35	19																													
12	17	41	07	03	04	01	15	42	26	30	35																												
13	14	20	-01	05	04	-12	21	26	64	13	45	38																											
14	28	54	24	21	05	18	26	44	20	52	17	31	13																										
15	34	10	18	31	25	22	49	47	45	44	26	28	33	23																									
16	24	14	19	37	24	23	31	57	44	43	19	43	33	25	70																								
17	18	12	01	22	24	11	21	33	58	25	07	22	50	21	49	52																							
18	37	49	06	19	10	21	38	49	35	67	26	31	20	54	43	46	25																						
19	20	20	05	06	16	07	37	48	35	63	26	27	21	48	35	41	28	58																					
20	07	09	-02	04	01	10	18	09	12	20	10	03	06	08	17	15	17	23	22																				
21	11	16	01	01	05	-06	13	23	22	33	18	08	13	16	12	23	11	38	49	24																			
22	12	31	-02	-07	-04	01	27	14	-07	19	11	18	-02	14	06	-02	-12	26	07	-01	10																		
23	07	15	01	07	01	-09	12	21	12	18	23	16	13	11	19	14	02	27	15	17	19	20																	
24	23	33	17	20	18	22	38	42	38	50	21	31	30	45	40	36	28	53	40	30	19	18	28																
25	13	46	10	20	08	12	38	39	29	52	21	30	19	63	30	28	15	63	53	20	27	26	17	48															
26	07	17	17	20	25	04	33	29	34	23	34	24	27	15	40	25	15	22	27	21	12	04	16	30	38														
27	15	26	02	22	12	12	33	40	39	35	16	27	25	28	47	46	40	40	23	15	20	10	11	38	43	24													
28	00	-02	-16	-04	-12	-08	-03	03	-02	12	00	-07	02	00	02	08	00	22	30	30	38	-05	-03	-05	16	02	10												
29	25	08	56	53	37	67	23	15	06	10	-04	03	-06	13	36	31	11	18	08	09	-01	04	00	26	10	18	15	-14											
30	24	19	40	62	40	68	19	27	21	17	-14	20	08	18	38	47	32	27	11	19	06	00	03	32	20	19	30	-04	70										
31	04	09	12	10	28	24	-06	03	08	-09	-11	07	09	06	07	06	33	03	01	08	03	00	-07	14	05	04	03	-13	29	36									
32	31	35	14	18	13	29	41	46	28	58	19	21	13	51	35	38	16	62	46	16	33	15	11	48	50	14	41	13	36	39	07								
33	14	28	10	15	09	12	22	24	22	21	16	13	11	85	22	25	16	38	30	23	29	00	01	27	44	24	33	17	22	30	10	59							
34	11	01	01	05	14	08	21	10	13	25	11	-16	13	07	13	12	11	27	37	31	39	03	05	21	19	05	12	27	16	13	04	27	24						
35	21	14	-04	-01	15	08	10	11	16	32	06	-02	04	24	09	07	09	32	33	20	53	02	06	22	24	10	18	23	15	14	04	40	37	35					
36	09	31	-02	-01	-04	17	23	23	-12	27	-03	14	-16	26	-02	00	-09	31	22	04	17	62	13	15	36	00	13	08	16	14	07	35	20	14	27				
37	03	09	06	16	15	33	36	20	09	25	12	04	01	21	21	11	10	15	17	17	-01	10	08	18	19	18	08	-10	27	19	00	27	24	12	12	20			
38	03	-12	-02	07	12	-02	17	02	08	15	07	-14	05	02	06	-03	04	05	26	-02	31	01	-03	02	05	-01	08	07	-01	-07	-08	14	10	36	28	00	10		
39	38	57	18	40	20	42	42	53	36	58	11	31	20	59	43	50	35	63	52	16	28	17	04	44	55	24	43	21	36	49	05	62	48	20	26	33	29	03	
40	-04	06	07	02	10	16	-31	-22	-08	-24	-22	-19	-12	-24	-18	-23	-02	-14	-32	-02	-14	-12	-10	-07	-24	11	12	-07	22	25	23	-13	-02	-08	03	-06	-08	-18	-21

[1]A missing data intercorrelation computer program was used.

[2]See key to items.

KEY TO

8-BLOCK FACTOR ANALYSIS

Variable	Category
1	Mother move blocks
2	Child move blocks
	MOTHER
	Request Talk
3	Height
4	Mark
5	Height and Mark
6	Unclassified
	Request Understanding
7	Height
8	Mark
9	Height and Mark
10	Unclassified
	Request Placement
11	Height
12	Mark
13	Height and Mark
14	Unclassified
	Talk About
15	Height
16	Mark
17	Height and Mark
18	Unclassified
19	Direct Request
20	Respond
21	Comments
22	Task Irrelevancy
23	Praise
24	Acknowledge
25	Correction Alone
	Correction/Reason
26	Height
27	Mark
28	Threaten
	CHILD
	Talk About
29	Height
30	Mark
31	Height and Mark
32	Unclassified
33	Direct Request
34	Respond
35	Comments
36	Task Irrelevancy
37	I Don't Know
38	Refuse, Reject
39	Mother Teaching Time
40	Child Total Task Score

Table IV-16

8-BLOCK TASK
VARIABLES LOADING HIGHEST ON EACH FACTOR[1]
(Variable Ns range from 161 to 169)

		Loading
FACTOR I	(13.1%)	
14.	Mother request placement - unclassified	.86
25.	Mother correction alone	.74
2.	Child move blocks	.67*
39.	Mother teaching time	.67*
18.	Mother talk about - unclassified	.66*
10.	Mother request understanding - unclassified	.62*
32.	Child talk about - unclassified	.60*
19.	Mother direct request	.55*
24.	Mother acknowledge	.50*
33.	Child direct request	.46*
8.	Mother request understanding - mark	.46*
12.	Mother request placement - mark	.39*
36.	Child task irrelevancy	.33*
FACTOR II	(9.9%)	
29.	Child talk about - height	.81
4.	Mother request talk - mark	.81
3.	Mother request talk - height	.78
30.	Child talk about - mark	.75*
6.	Mother request talk - unclassified	.72
5.	Mother request talk - height and mark	.48
16.	Mother talk about - mark	.34*
39.	Mother teaching time	.34*
15.	Mother talk about - height	.32*
FACTOR III	(10.8%)	
17.	Mother talk about - height and mark	-.78
16.	Mother talk about - mark	-.72*
9.	Mother request understanding - height and mark	-.70*
15.	Mother talk about - height	-.68*
13.	Mother request placement - height and mark	-.59*
27.	Mother correction/reason - mark	-.55
8.	Mother request understanding - mark	-.55*
12.	Mother request placement - mark	-.39*
7.	Mother request understanding - height	-.36*
10.	Mother request understanding - unclassified	-.37*
39.	Mother teaching time	-.34*
19.	Mother direct request	-.31*
18.	Mother talk about - unclassified	-.30*
24.	Mother acknowledge	-.30*

[1]From a principal components factor analysis followed by a varimax rotation.

(Continued)

Table IV-16

8-BLOCK TASK
VARIABLES LOADING HIGHEST ON EACH FACTOR
(Variable Ns range from 161 to 169)

(Continued)

		Loading
FACTOR IV	(6.8%)	
38.	Child refuse, reject	.72
34.	Child respond	.69
21.	Mother comments	.67
35.	Child comments	.66
19.	Mother direct request	.47*
28.	Mother threaten	.30*
FACTOR V	(4.7%)	
31.	Child talk about - height and mark	.69
40.	Child task score	.68
7.	Mother request understanding - height	.32*
30.	Child talk about - mark	.32*
FACTOR VI	(3.6%)	
23.	Mother praise	.76
24.	Mother acknowledge	.40*
20.	Mother respond	.34
FACTOR VII	(4.2%)	
37.	Child - "I don't know"	-.76
7.	Mother request understanding - height	-.52*
FACTOR VIII	(4.1%)	
28.	Mother threaten	.71*
20.	Mother respond	.62*
33.	Child direct request	.35*
FACTOR IX	(4.7%)	
22.	Mother task irrelevancy	.87
36.	Child task irrelevancy	.80*
FACTOR X	(3.1%)	
1.	Mother move blocks	-.75

(Continued)

Table IV-16

8-BLOCK TASK
VARIABLES LOADING HIGHEST ON EACH FACTOR
(Variable Ns range from 161 to 169)
(Continued)

		Loading
FACTOR XI	(4.6%)	
11.	Mother request placement - height	.73
13.	Mother request placement - height and mark	.54*
26.	Mother correction/reason - height	.52
9.	Mother request understanding - height and mark	.32*
2.	Child move blocks	.31*
12.	Mother request placement - mark	.30*

Eleven factors accounted for 69.6% of the total variance.

*Item also shows substantial loading on another factor.

KEY TO

WHOLE SCORE FACTOR ANALYSIS ITEMS

1	SES
2	Age (in months)
3	Height
4	Weight
5	Sex
6	Food intake nutrition score
7	Food intake total food score
8	SBI - Task Orientation
9	SBI - Extraversion-Introversion
10	SBI - Hostility-Tolerance
11	POCL - Test Orientation
12	POCL - Sociability
13	HES #1 - Mother involvement (Items 13, 21, 23, 24, 32)
14	HES #2 - Play things (Items 2, 3, 5, 15, 16, 17 from checklist 33)
15	HES #3 - Mother teaches (Items 5, 6, 8, 9, 10, 11 from checklist 34)
16	HES #4 - Household tasks (Items 1, 2, 3, 4, 6, 10, 29, 30, 75 from checklist 36)
17	HES #5 - Television in home (Item 25)
18	HES #6 - Books and time reads (Items 29, 30)
19	(HES Observation) = Supportive Interactions (Items 1, 3, 6, 9, 11)
20	(HES Observation) = Punitive Interventions (Items 2, 4, 10)
21	PSI total
22	DDST language (Items 9 through 15)
23	DDST fine motor (Items 1-s, 2 through 7, and 8-3)
24	DDST gross motor (Items 16 through 22)
25	DDST personal-social (Items 23 through 30; 28 and 29)
26	Concept Development (9 items)
27	8-Block Child Score

Table V-1

CORRELATIONS[1] BETWEEN SELECTED WHOLE SCORES[2]

(Whole score Ns range from 173 to 190)

		SES	Age	H	W		Food Intake		SBI			POCL		HES						HES Obs		PSI	DDST				CDT
		1	2	3	4		6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Age	2	-12																									
Height	3	-02	63																								
Weight	4	-05	48	70																							
Sex	5	-09	21	10	00																						
	6	08	-08	01	12	-13																					
Food Intake	7	-02	-01	12	23	-15	70																				
	8	02	24	17	10	-06	-01	01																			
SBI	9	01	05	00	-02	-03	-03	-05	37																		
	10	03	-14	-04	-05	-04	-03	01	-35	-28																	
	11	02	29	21	22	05	-03	-03	41	10	-31																
POCL	12	06	15	16	23	03	04	08	30	12	-22	70															
	13	-05	05	02	-13	-06	-19	-22	-17	-17	08	-24	-22														
	14	-05	-10	-06	-08	09	-10	-01	-26	-22	32	-15	-07	15													
	15	-10	-10	-20	-10	-10	-10	-12	-14	-10	08	-22	-10	36	21												
HES	16	-19	-01	-06	-09	-03	-32	-23	-31	-21	19	-16	-14	31	37	34											
	17	-06	-06	-08	-14	03	06	-03	-12	01	11	-05	-10	04	09	13	-09										
	18	-28	-07	-09	-11	15	-30	-18	-23	-21	27	-20	-19	28	40	09	29	17									
HES	19	04	00	02	02	-05	15	11	02	10	-03	18	11	-16	-16	-11	-19	-01	-16								
Observations	20	-06	-09	-02	-02	02	04	04	-24	-02	25	-24	-12	05	07	-01	05	10	19	07							
PSI	21	08	58	50	44	03	07	06	35	-01	-24	56	41	-06	-17	-20	-18	-19	-25	12	-19						
	22	01	49	38	40	-11	10	08	33	10	-25	39	26	-01	-14	-11	-14	-14	-28	07	-20	70					
	23	-05	56	48	38	11	-07	-04	32	09	-19	37	21	01	-14	-12	-07	-11	-09	-05	-15	60	59				
DDST	24	-02	42	43	41	02	-03	04	16	06	-13	29	18	-02	-07	-24	-14	-08	-10	02	-10	46	39	44			
	25	01	25	15	15	02	11	04	19	07	-38	23	14	-05	-19	-16	-22	-03	-28	07	-03	33	31	32	21		
CDT	26	-04	39	39	32	-02	11	08	28	09	-30	39	26	-04	-12	-15	-12	-13	-18	12	-17	68	61	59	41	30	
8-Block	27	12	34	27	25	06	11	08	27	11	-23	46	39	-19	-12	-17	-17	-10	-15	16	-12	50	41	43	19	24	39

[1]A missing data intercorrelation computer program was used.

[2]See key to whole scores.

Table V-2

SELECTED WHOLE SCORE ROTATED FACTOR LOADINGS[1]
NINE FACTORS EXTRACTED

(Variable Ns range from 173 to 190)

	Principal Components Analysis (unities in diagonals)										Image Analysis (R^2 in diagonals)			
VARIABLE[2]	FI	FII	FIII	FIV	FV	FVI	FVII	FVIII	FIX	h^2	R^2	I	II	III
1	-04	04	-03	05	-01	-90	-04	07	03	83	4.6	-06	-15	-13
2	78	-03	-12	07	-07	14	-04	-13	05	67	52.1	71	10	-07
3	84	-03	05	-01	-13	03	01	14	-02	74	52.8	72	-04	07
4	74	-04	24	05	-08	08	00	20	-13	69	47.0	65	-16	09
5	05	28	-27	04	-60	25	-15	-15	22	66	3.4	08	16	00
6	-01	03	88	01	-04	-10	05	-14	09	82	46.6	04	-67	07
7	08	03	89	02	-06	08	01	06	-04	82	44.4	11	-63	16
8	21	-61	-03	36	-02	-01	-23	-13	-01	62	32.0	24	-06	-50
9	01	-79	-09	08	-03	07	05	00	10	66	12.0	-02	-07	-33
10	-03	35	00	-22	03	-13	21	64	12	65	24.2	-13	07	46
11	25	-12	-06	82	-10	-02	00	-13	-02	79	48.2	38	-01	-57
12	13	-09	05	82	-06	00	00	03	-04	71	30.5	27	-08	-47
13	09	25	-29	-32	56	02	-04	-11	13	61	20.1	02	35	27
14	-08	53	-04	09	16	18	-17	37	20	56	18.6	-06	22	36
15	-18	11	-06	-06	71	14	-13	06	16	61	12.6	-16	24	19
16	-06	40	-32	-06	43	32	-06	21	-24	66	29.7	-05	44	30
17	-10	-05	06	-04	08	03	05	05	89	82	3.0	-13	01	10
18	-07	35	-31	-10	01	45	01	30	27	60	29.5	-11	39	35
19	-04	-10	11	25	-02	-06	75	-10	-08	67	7.3	02	-21	-15
20	-03	11	00	-27	-08	14	63	15	18	56	9.3	-10	-03	28
21	70	03	02	43	02	-17	01	-28	-10	79	67.1	73	-05	-35
22	65	-10	09	29	22	-12	-02	-30	-08	68	51.8	65	-06	-30
23	71	-04	-13	20	02	02	-11	-28	03	66	52.2	67	10	-23
24	65	-08	-04	05	-12	-03	-02	-05	-03	46	30.7	54	00	-12
25	24	-02	08	04	-09	-04	07	-73	05	62	17.9	28	-12	-29
26	59	-02	07	32	13	-01	03	-37	-07	61	47.7	62	-05	-28
27	35	02	05	56	-10	-13	08	-20	04	51	31.6	42	-10	-34
PCT. V	16.4	7.1	7.7	9.4	5.7	5.1	4.3	6.8	4.4			15.7	6.2	8.8

Nine factors accounted for 67.0% of the total variance.

Three factors accounted for 70.2% of the common variance.

[1]Principal components factor analysis or image analysis followed by

Table V-3

SCORES LOADING ON FACTORS OF WHOLE SCORE FACTOR ANALYSIS

(Variable Ns range from 173 to 190)

		Loading
FACTOR I	(16.4%)	
3.	Height	.84
2.	Age	.78
4.	Weight	.74
23.	DDST Fine Motor	.71
21.	PSI Total	.70*
22.	DDST Language	.65*
24.	DDST Gross Motor	.65
26.	Concept Development Test	.59*
27.	8-Block Child Score	.35*
FACTOR II	(7.1%)	
9.	SBI - Extraversion-Introversion	-.79
8.	SBI - Task Orientation	-.61
14.	H/S HES - Playthings	.53*
10.	SBI - Hostility-Tolerance	.35*
18.	H/S HES - Books and Time Reads	.35*
FACTOR III	(7.7%)	
7.	Food Intake Total Food Score	.89
6.	Food Intake Nutrition Score	.88
16.	H/S HES - Household Tasks	-.32*
18.	H/S HES - Books and Time Reads	-.31*
FACTOR IV	(9.4%)	
11.	POCL - Test Orientation	.82
12.	POCL - Sociability	.82
27.	8-Block Child Score	.56*
21.	PSI Total	.43*
13.	H/S HES - Mother Involvement	-.32*
26.	Concept Development Test	.32*
FACTOR V	(5.7%)	
15.	H/S HES - Mother Teaches	.71
5.	Sex	-.60
13.	H/S HES - Mother Involvement	.56*
16.	H/S HES - Household Tasks	.43*

(Continued)

Table V-3

SCORES LOADING ON FACTORS OF WHOLE SCORE FACTOR ANALYSIS

(Variable Ns range from 173 to 190)

(Continued)

		Loading
FACTOR VI	(5.1%)	
18.	H/S HES - Books and Time Reads	.45*
16.	H/S HES - Household Tasks	.32*
FACTOR VII	(4.3%)	
19.	H/S HES - Observation Supportive Interactions	.75
20.	H/S HES - Observation Punitive Interventions	.63
FACTOR VIII	(6.8%)	
25.	DDST Personal/Social	-.73
10.	SBI - Hostility-Tolerance	.64*
14.	H/S HES - Playthings	.37*
26.	Concept Development Test	-.37*
18.	H/S HES - Books and Time Reads	.30*
22.	DDST Language	-.30*
FACTOR IX	(4.4%)	
17.	H/S HES - Television in Home	.89

Nine factors accounted for 67.0% of the total variance.

*Item showed substantial loading on more than one factor.

Table VI-1

Fall 1972 to Spring 1973 Changes on the Child Tests and Rating Scales

Instrument	N	Fall Mean	Spring Mean	Difference	t-ratio	Predicted Difference
Preschool Inventory	84	12.29	15.76	+3.48	6.92*	1.61
DDST Language	84	3.05	3.67	+ .62	4.40*	.37
DDST Fine Motor	97	5.46	5.70	+ .24	1.01	.63
DDST Gross Motor	90	4.69	5.18	+ .49	2.51	.72
DDST Personal-Social	93	5.63	6.03	+ .40	2.91*	.24
SBI Task orientation	95	23.68	24.19	+ .51	.91	NA[1]
SBI Extraversion	94	26.72	28.24	+1.52	2.48*	NA[1]
SBI Hostility	93	18.32	18.57	+ .25	.46	NA[1]
POCL Test Oriented	90	25.84	25.69	- .16	-.21	NA[1]
POCL Sociability	92	18.60	19.03	+ .43	.63	NA[1]

*Significant at less than .05 probability

[1]This scale is not "developmental", in the sense that older children would not necessarily be expected to score better than younger children, so it is not logical to predict scores from age.

Table VI-2
Preschool Inventory Item Changes

	Fall Percent Passing	Spring Percent Passing	Change	χ^2
1. What is your first name?	.63	.87	.24	16.67*
2. Show me your shoulder.	.60	.80	.20	8.76*
3. What is this? (knee)	.60	.87	.27	18.24*
4. What is this? (elbow)	.44	.65	.21	14.73*
5. Put the yellow car on the little box.	.45	.55	.10	2.13
6. Put the blue car under the green box.	.27	.37	.10	2.91
7. Put 2 cars behind the box in the middle.	.07	.18	.11	5.40*
8. If you were sick, who would you go to?	.56	.57	.01	.04
9. When do we eat breakfast?	.32	.49	.17	7.54*
10. Where would you look for a lion?	.25	.25	.00	.00
11. What does a dentist do?	.38	.68	.30	16.89*
12. Which way does a phonograph record go?	.23	.35	.12	4.55*
13. Which way does a ferris wheel go?	.19	.24	.05	1.00
14. How many hands do you have?	.62	.55	-.07	1.64
15. How many wheels does a bicycle have?	.56	.65	.10	2.00
16. How many wheels does a car have?	.24	.49	.25	13.36
17. How many toes do you have?	.06	.20	.14	7.20*
18. Which is slower, a car or a bicycle?	.58	.62	.04	.22
19. Point to the middle (checker)	.39	.57	.18	7.76*
20. Point to the first (checker)	.43	.46	.04	.33
21. Point to the last (checker)	.29	.38	.10	1.88
22. Point to the second (checker)	.25	.25	.00	.00
23. Which of these two groups (of checkers) has less?	.44	.33	-.11	1.80
24. Which of these two groups (of checkers) has more? (equal)	.06	.11	.05	1.14
25. Point to the (figure) that is most like a tent	.65	.69	.04	.26
26. Make one like this (square)	.33	.46	.13	4.84*
27. Make one like this (triangle)	.21	.36	.14	5.54*
28. Which (crayon) is the color of the night?	.50	.68	.18	6.43*
29. Color the square	.26	.37	.11	2.31
30. Color the square purple	.24	.49	.25	11.92*
31. Color the triangle	.61	.55	-.06	.71
32. Color the triangle orange	.57	.69	.12	3.57

*Significant at less than .05 probability

Table VI-3
Denver Developmental Screening Test Item Changes

	Fall Percent Passing	Spring Percent Passing	Change	X^2
Language Items				
10. Cold, tired, hungry	.47	.71	.24	18.00*
11. Prepositions	.65	.75	.10	3.12
12. Colors	.41	.57	.16	9.85*
13. Opposites	.36	.52	.16	9.85*
14. Composition of	.13	.32	.19	17.19*
Fine Motor Items				
5. Draws vertical lines	.68	.93	.25	20.16*
1. Dumps raison-spon.	.82	.13	-.69	65.22*
3. Imitates bridge	.74	.87	.13	8.05*
2. Builds tower	.86	.86	.00	.00
4. Picks longer line	.41	.63	.22	11.00*
6. Copies circle	.61	.66	.05	.76
7. Copies cross	.57	.68	.11	5.76*
8. Draws man - 3 parts	.50	.51	.01	.04
8. Draws man - 6 parts	.19	.22	.03	.53
Gross Motor Items				
16. Balances - 1 sec.	.94	.94	.00	.00
16. Balances - 5 sec.	.39	.41	.02	.10
16. Balances - 10 sec.	.15	.21	.06	1.38
17. Jumps in place	.86	.92	.06	3.00
18. Jumps over paper	.84	.84	.00	.00
19. Hops	.65	.85	.20	13.33*
20. Heel to toe walk - frontwards	.23	.18	-.05	.93
22. Catches ball	.27	.51	.24	16.00*
21. Backward walk	.17	.08	-.09	4.26*
Personal/Social Items				
23. Plays Interactive games	.84	.87	.03	.60
24. Separates easily from mother	.71	.80	.09	3.00
25. Washes and dries hands	.96	.97	.01	.17
26. Puts on clothing	.99	.95	-.04	2.67
27. Buttons up	.67	.72	.05	.86
29. Dresses with supervision	.67	.78	.11	3.27
30. Dresses without supervision	.78	.81	.03	.39

Table VI-4
Schaefer Behavior Inventory Item Changes

	Fall Mean	Spring Mean	Chance	t ratio
SBI - Task Orientation				
1. Pays attention to what doing when other things going on around	4.52	4.61	.09	.46
2. Stays with job until finishes it	4.19	4.45	.26	1.35
7. Becomes involved in what is doing	5.22	5.39	.17	.87
10. Goes from one thing to another; quickly loses interest	4.31	4.28	-.02	.09
13. Watches carefully when Home Visitor showing how to do something	5.45	5.45	.00	.00
SBI - Extraversion				
2. Tries to be with another person or group of people	5.35	5.80	.45	2.30*
5. Likes to take part in activities with others	5.70	6.12	.41	2.54*
8. Enjoys being with others	6.17	6.38	.21	1.23
11. Watches others, but does not join with them	4.69	4.98	.29	1.12
14. Does not wait for others to approach, but makes first friendly move	4.81	4.97	.16	.67
SBI - Hostility				
3. Gets impatient or unpleasant when can't have what wants when wants it	4.43	4.47	.04	.23
6. Slow to forgive when offended	3.66	3.49	-.16	.57
9. Stays angry for long time after argument	2.23	2.53	.30	1.51
12. Complains if can't get own way	4.43	4.32	-.11	.59
15. Gets angry when has to wait turn or share	3.58	3.75	.17	.93

* Significant at < .05 probability

Table VI-5

Pupil Observation Checklist Item Changes

	Fall Mean	Spring Mean	Chance	t ratio
POCL - Test Oriented Items				
1. Resistive - Cooperative	5.27	5.48	.21	1.06
4. Indifferent - Involved	5.26	5.01	-.24	1.45
5. Defensive - Agreeable	5.53	5.41	-.12	.69
7. Gives up - Keeps Trying	4.91	4.78	-.13	.63
9. Inattentive - Attentive	4.88	5.01	.13	.65
POCL - Sociability Items				
2. Shy - Sociable	4.41	4.71	.29	1.19
3. Withdrawn - Outgoing	4.65	4.67	.02	.10
6. Passive - Active	5.57	5.27	-.29	1.63
8. Quiet - Talkative	3.97	4.38	.41	1.94

APPENDIX A

FIELD OPERATIONS - SPRING 1973

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FIELD OPERATIONS

Spring 1973[1]

This second report on field operations used to collect summative data for the National Home Start Evaluation focuses on changes in procedures described in the Fall 1972 Report. Changes in the three components of field operations (recruitment, training, on-site testing and monitoring) are summarized below:

Recruitment

- Expansion of the size of the field staff to three community interviewers and one site coordinator for each of the six summative evaluation sites;

Training

- A modified approach to training field staff, using protocols for two of the child measures;
- More basic training in small group sessions rather than in large general sessions;

On-Site Testing and Monitoring

- The use of site coordinators to coordinate testing activities with the Home Start Program and the field staff;
- More frequent monitoring visits for more timely problem identification, to provide on-site technical assistance, and determine inter-judge reliability of scoring;
- And data check-in on site.

Each of these changes in the field operations design are described in more detail in subsequent sections of this chapter. The three components (recruitment, training, and on-site testing and monitoring) are evaluated to determine the success of the Spring data collection efforts and to identity problem areas to be taken into consideration in finalizing plans for the Fall.

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[1] The time schedule that was followed for the Spring can be found on page 13.

I. Recruitment

The field staff for the Spring data collection effort was expanded from two to three per site in the Fall to four local persons in the Spring. The primary reason for this expansion was to select one person in each site to serve as site coordinator to coordinate testing activities, thereby increasing site operation efficiency and reducing time spent by community interviewers on administrative details, such as scheduling testing visits.[1] Site coordinators were selected at the training conference in Michigan on the basis of test administration and scoring performance, suitability for the position, and time availability during the Spring to coordinate testing activities.

Procedures that were used by Abt Associates Inc. and the High/Scope Educational Research Foundation for recruiting local personnel and qualifications for the position of community interviewer are detailed in Appendix A of this chapter.

Overall, the Spring recruiting effort was successful in that there was no attrition between the time of recruitment and the start of the training conference. Some problem areas need to be noted, however.

- In some sites, it was extremely difficult to recruit the ethnic mix of field staff that was desired by the program despite extensive advertising in both regular and ethnic local newspapers;
- Successful completion of training does not guarantee adequate performance as a community interviewer on site. Two community interviewers were terminated following the on-site monitoring visit since they had failed to practice and study the tests and questionnaires sufficiently, resulting in unsatisfactory test performance.
- Retention of qualified community interviewers following training is a problem.[2] Procedures need to be developed to determine at the time of recruitment whether field staff will "stay with the job." Attrition of field staff is high between bi-annual data collection efforts. Many of them lose interest after testing, move away from the area, or accept full-time employment.[3]

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[1] The responsibilities of the site coordinator are described in more detail in Section III of this chapter.

[2] Two community interviewers dropped out prior to the start of testing.

[3] 33% attrition between Fall 1972 and Spring 1973.

II. Training of Field Staff

A six-day training conference was held in mid-April in Clinton, Michigan (Camp High/Scope) to train the field staff of 24 in the administration and scoring of standard tests and interviews used for the summative evaluation. The training staff consisted of six people from the High/Scope Educational Research Foundation and Abt Associates Inc.

Based on Abt Associates' recommendation last Fall, scoring and administration procedures for the three child measures (PSI, DDST, and CDT) were standardized which improved both the quality of the training and the field operations during the Spring.

The training design for the Spring was developed jointly by Abt Associates and High/Scope and had the following features:

- the use of protocols for two of the child measures (PSI and DDST);
- a more unstructured approach to training the 8-Block Sort Task;
- more basic training in small group sessions rather than in large general sessions; (small group sessions were used in the Fall primarily as practice sessions with little or no direct instruction);
- two home visits to practice the child measures and the 8-Block, rather than having practice sessions with children in a group setting as was done in the Fall.

In addition to the above-mentioned changes which are described in detail in this section, more emphasis was placed on:

- interview practices and the administration of various parent questionnaires in the test battery;
- the Home Start Program, the evaluation, and specific testing situations (see Chapter IV of the Field Procedures Manual included in Appendix C);
- team-building by having field staff from each of the six summative evaluation sites work closely together during the training conference.

Child Measure Protocols

Protocols were developed by Abt Associates Inc., simulating testing situations, to insure that uniform procedures would be followed for training the six small groups of four trainees. Protocols are useful in small group practice since the person role-playing the child reads responses from the protocol and is able to correct and assist the community interviewer, who is using a standard score form, in terms of both correct test administration and scoring procedures.

Protocols also are an extremely valuable device for identifying ambiguities in scoring procedures and for clarifying problem areas.

For the PSI (Preschool Inventory) four protocols were developed and for the DDST (Denver Developmental Screening Test) three, going from a very simple to a very difficult testing situation. The most difficult test protocol, DDST #3 and PSI #4, were used to determine the accuracy of community interviewer scoring of the tests. These protocols were administered by training staff in a general session, with community interviewers and site coordinators scoring the responses. Responses were then noted for the entire group on overhead transparencies which were displayed during an evening review session. Problem areas were first discussed in a group setting and then reviewed by the trainers with each individual trainee.

DDST and PSI protocols can be found in Appendix B of this chapter.

Training Schedule

A schedule indicating the sequence of tests and questionnaires that were trained during the course of the training conference can be found on page 6. For the DDST and PSI, the following basic training schedule was followed:

- General Session to introduce and demonstrate the test, using the first protocol developed for that test;
- 8-Group Sessions (2 trainers and 8 trainees) to demonstrate the test again, discuss scoring and administration procedures, and read the administration manual.
- 8-Group Sessions for another demonstration of the test, using protocol #2. Trainees scored responses and checked their score sheets in the group.

- 4-Group Sessions (1 trainer and 4 trainees, grouped by site) to practice the tests first using protocols and then without them.

- General Session to score the most difficult protocol. (Score sheets were then corrected, reviewed both in the group and individually with each trainee. Trainees who didn't score accurately during the general session were required to participate in an evening review session on that particular test focusing on specific problem areas.)

8-Block Training

A different, less structured approach was used for training the 8-Block Sort Task. A demonstration was given of the 8-Block Sort Task with a trainer showing how the task is to be taught to the mother. Trainees then went into 8-Groups and, without ever having seen the Administration Manual, tried to recall the Sort Task. This training approach helped community interviewers to "conceptualize" the task without getting too involved in reading the Administration Manual or being too preoccupied with the correct wording for each section of the Sort Task. By using this training approach, trainees gained a better understanding of the 8-Block in a much shorter period of time than they did during the Fall.

Home Visit Practice

With the assistance of the Clinton, Michigan School Department, High/Scope was able to locate twelve families with 3-5 year old children in Clinton and surrounding towns. Two visits were scheduled to each of the families -- once to practice the DDST and PSI and the second visit for the Concept Development Test and the 8-Block. Trainees visited the homes in pairs and were accompanied by a trainer. Each of the trainees administered one test during the visit and scored along while the other trainee was testing. Score forms and administration procedures were reviewed with the trainees following the testing visits.

The practice sessions in the home were extremely useful and gave trainees a better idea of what is involved in making testing visits. Trainees indicated, however, that they would have preferred to visit homes of low-income families during the training conference. This, however, may be difficult or impossible to arrange.

TRAINING SCHEDULE

Spring 1973

TIME	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
8:00-							
9:00-		PSI	DENVER	REVIEWS - DDST & PSI	DEBRIEFING ON HOME VISITS	REVIEWS 8-BLOCK & CDT	LOGISTICS
10:00-					8-BLOCK		
11:00-							
12:00-							
1:00-							
2:00-		PSI	DENVER	HOME VISITS	CONCEPT DEVELOPMENT	HOME VISITS	END OF TRAINING CONFERENCE
3:00-		PARENT INTERVIEWS	8- BLOCK				
4:00-							
5:00-	ARRIVAL AT CAMP					DEBRIEFING ON HOME VISITS	
6:00-							
7:00-					FOOD INTAKE HEIGHT & WEIGHT SCHAEFER	GENERAL PRACTICE	
8:00-	GENERAL MEETING	PSI PEVIEW	DENVER REVIEW				
9:00-	o Home Start o PSI Protocol #1						

Site Coordinator Training

Following the six-day training conference for community interviewers, site coordinators remained in Clinton, Michigan for an additional day to receive special training in site coordination activities and procedures to be followed on site. Specifically, this additional day was used as follows:

- a meeting was held with site coordinators and site monitors responsible for conducting the start-up review session to discuss monitoring procedures. (Monitoring Procedures are discussed in detail in the Field Procedures Manual, page 54, which can be found in Appendix C.) Discussion focused primarily on the monitor's role and conduct in the home; i.e., never interfere with the conduct of testing or comment on testing performance while still in the family's home.

- the remainder of the day was spent with site coordinators to review on-site field procedures (scheduling, family assignments, procedures for obtaining names of alternates for testing, liaison activities with the Home Start Program) and logistics (data check-in). Procedures are detailed in the Field Procedures Manual (Appendix C).

This additional day of training was only moderately useful since most of the participants were extremely tired. More time should have been allowed to review procedures, preferably prior to community interviewer training.

Evaluation of Training

The effectiveness and quality of training can be evaluated in the following three ways:

1. By determining accuracy of scoring through a review of the PSI and DDST test scores of community interviewers following a half-day training session;[1]

2. By determining accuracy in test administration on the basis of monitoring reports from site monitors and coordinators;

3. By determining inter-judge reliability of scoring[2] through an analysis of discrepancies in scoring by community interviewers and site coordinators and monitors.

The following chart shows the accuracy rates for the PSI and DDST in terms of scoring, and for the PSI, DDST and CDT on test administration and inter-judge reliability, together with overall averages. The formula used for computing percentages can be found on the following page, together with a discussion of errors which often occurred on each of the tests.

EVALUATION OF TRAINING
% ACCURACY
Spring 1973

Test	1. Scoring	2. Test Administration	3. Inter-judge Reliability	Overall Average
PSI	92%	97.6%	97.9%	95.8%
DDST	94.3%	98%	89%	93.8%
CDT	N/A	92%	89%	90.5%
Average	93%	95.3%	92%	93.4%

[1] No data is available on the CDT since protocols had not yet been developed for this test

[2] When monitoring testing visits, site coordinators and/or site monitors scored along with the community interviewer who administered the test so that inter-judge reliability can be determine

The following formula was used for computing accuracy percentages on the previous page:

$$\frac{\text{TOTAL \# OF TEST ADMINISTRATIONS}^{1} \times \text{TOTAL \# OF ITEMS/TEST} - \text{TOTAL \# OF ITEMS IN ERROR}}{\text{TOTAL \# OF TEST ADMINISTRATIONS}^{1} \times \text{TOTAL \# OF ITEMS/TEST}} = \text{\% ACCURACY}$$

[1] Refers to total # of tests administered for which monitoring data is available.

The chart below shows the frequency of specific errors that were made in the administration of the three child measures. The errors are presented in whole numbers. Also indicated on the chart are the total number of test items for each of the three child measures which formed the basis for the analysis. Errors which occurred less than three times are included in the Other Category. The circled numbers indicate areas of concern which need to be addressed in the subsequent training conference.

# of Administration Errors

Errors	PSI N=1056[1]	DDST N=1230[1]	CDT N=360[1]	TOTAL N=1647[1]
Incorrect placement of test materials	(6)	5	(16)	27
Repeats, too many or too few	(8)	(6)	2	16
Probing incorrectly or failing to do so	(11)	1	2	14
Failing to ask child for verbal response	-	-	(6)	6
Unsatisfactory environment for test	-	4	-	4
Other (occurring less than twice)	-	7	3	10

[1] N= # of tests Administered x # of Items/Test

In addition to discussing areas of concern indicated on the previous page, data also will be presented on items on which inter-judge reliability was low.[1]

Preschool Inventory (PSI)

- Probing -- More than half of the administration errors on the PSI were in terms of incorrect probes on test items. Probing instructions for this test are somewhat complicated since the tester needs to memorize what constitutes a definitely wrong response or an ambiguous response. Ambiguous responses are followed by a probe.

- Repeats -- Errors in repeats of items also occurred frequently. Instructions for repeating items on the PSI are not consistent. All items can be repeated once, except for the three car items.

- Placement of Test Materials -- Another area of concern is the incorrect placement of test materials, such as the groups of checkers. Additional instructions for the community interviewer regarding placement need to be printed on the score forms.

The only item with more than two discrepancies in scoring was Item #12 - Which Way Does a Phonograph Record Go?

Denver Developmental Screening Test (DDST)

- Repeats -- Instructions on the DDST are to repeat each item twice if the child does not respond to the question, shrugs his shoulders, indicates he doesn't know or refuses to respond. Especially on language sections which are quite lengthy, community interviewers often fail to repeat twice out of fear that they will lose the child's attention. Some consideration needs to be given to modifying the test instructions so that the item can be stopped after the child has failed to respond to three of the sub-items.

Inter-judge reliability discrepancies occurred on the following items:

- #16 - Standing on One Foot (28)[2]
- #20 and 21 - Walking in A Straight Line Forward and Backward (24 each)
- #9, 10, 13, 14, and 15 - Language Items (19 total)
- #2 and 22 - Building Tower with Blocks and Catching Ball (11 each)
- #11 - Placement of Blocks - Prepositions (8)
- #4 - Picks the Longer Line (4)

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[1] Items with fewer than three errors are not included in this discussion.

[2] Discrepancies occurred primarily as a result of site coordinators or monitors using regular wrist watches to time the child rather than stop watches.

Special attention will be given to these items at the next training conference to insure that community interviewers score consistently during the Fall.

Concept Development Test (CDT)

- Placement of Test Materials -- More than half of the test administration errors on the CDT were in terms of incorrect placement of test materials such as the checkers and blocks. Instructions for placement need to be printed more clearly on the score forms and reviewed in more detail at the training conference.

- Verbal Response -- Community interviewers often failed to ask the child for a verbal response. Most of the items require two verbal responses from the child. If the child refuses to give the first verbal response, community interviewers often skip the second question.

Inter-judge discrepancies occurred on the following items:

- #4-2 - Part 2 of Classification with Blocks (14)
- #1 - One-to-One Matching (8)
- #2 - Conservation (7)
- #4-1 - Part 1 of Classification with Blocks (6)

The error rate on the CDT is relatively high when compared with that for the PSI and DDST. It is recommended that the CDT be thoroughly reviewed prior to the Fall field effort and that the test be modified in a way that will reduce the error rate both in terms of test administration and inter-judge reliability of scoring.

III. On-Site Testing and Monitoring[1]

Major changes in the field procedures developed for the Spring evaluation are summarized below:

- the use of site coordinators to schedule testing visits, act as liaison between the Home Start program and field staff, and data check-in on site;
- increased monitoring of testing visits by site coordinators (from approximately 5 per site in the Fall to 13 in the Spring);
- completion of all testing within a 5-week period as compared with 2-3 months during the Fall; and
- administration of the entire test battery in two visits rather than three, reducing testing and travel time from an average of 8 hours per family in the Fall to a little less than 7 hours in the Spring.[2]

Site Coordinator Responsibilities

Following is a description and discussion of specific responsibilities of the six site coordinators:

- Scheduling of Testing Visits -- Site coordinators were responsible for meeting with the Home Start Director or Coordinator to discuss scheduling procedures, and to meet or talk over the telephone with each Home Visitor to arrange a testing schedule for all families selected for Spring testing. Home Visitors were encouraged to accompany community interviewers on testing visits.[3] Site coordinators were also responsible for making changes in the testing schedules. Weekly, a revised schedule was prepared, copies of which were sent to the Home Visitor, the Home Start Director or Coordinator, and the Community Interviewer.
- Data Check-In -- All test materials were forwarded on a weekly basis by the community interviewers to the site coordinator who logged the materials and checked the tests and questionnaires for completeness and obvious scoring errors. At least once a week, the site coordinator discussed scoring errors and incompleteness of materials with the individual community interviewers and provided technical assistance where needed. This procedure was extremely valuable because it allowed for immediate feedback and prompt correction of scoring and administration errors. Site coordinators reported weekly on errors to Abt Associates. If additional mistakes were found by AAI, the site coordinator would be notified immediately.

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[1] Field procedures used for the Spring are detailed in the Field Procedures Manual developed by Abt Associates Inc., which can be found in Appendix C.

[2] Testing and travel time varied considerably from site to site.

[3] During the Fall of 1973, Home Visitors will have the option of not being present during testing visits to families enrolled in the program.

- Monitoring -- Site coordinators also were responsible for monitoring testing visits for each of the community interviewers following the on-site start-up monitoring by staff from Abt Associates Inc. and the High/Scope Educational Research Foundation. During the week of start-up monitoring in each of the sites, both the site monitor and the coordinator accompanied the community interviewer on testing visits. This was necessary to give the site coordinator some experience in monitoring procedures. During the Fall no testing visits will be made with more than one monitoring staff members since some Program Directors have expressed concern about the number of people present in the home which they feel may affect test performance of the child.

Completion of Test Battery in Two Visits -- Approximately 87% of the families in the sample participated only in two testing visits rather than in three. While this procedure reduced testing and travel time per family, some parents complained about the length of the testing visits.[1]

Site Preparation

A letter was prepared by Abt Associates Inc. for distribution to Home Visitors and parents participating in the summative evaluation to explain the purpose of the testing and provide some information regarding the content of the test battery. The letter to staff and parents can be found in Appendix D of this report.

Spring Schedule

The time schedule below was followed for Spring field operations:

March 12-16	Recruiting
April 8-14/15	Training of Community Interviewers & Site Coordinators
April 16-20	Scheduling of Testing Visits
April 23-27	Start-Up Review and Monitoring
April 23-May 18	Testing
June 1	All data collection activities complete.

[1] During the Fall, parents will be encouraged to let the community interviewer know if the visit is too long.

APPENDIX B

CODING MANUAL: 8-BLOCK AUDIO TAPE

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CODING MANUAL: 8-BLOCK AUDIO TAPE

High/Scope Educational Research Foundation
June, 1973

The audio portion of the 8-Block Sort Task is scored according to 46 mother and child verbal interaction categories. Three task-specific categories--"Request Talking," "Request Understanding", and "Request Placement"--fall under the MOTHER heading. The task-specific category, "Talk About", is found under both MOTHER and CHILD headings. Each task-specific category contains four subclassifications--Height, Mark, Height and Mark, and Unclassified. The mother and child categories are listed in Figure 1.

Tallying on the 8-Block Audio Score Form is sequential. The initial verbalization is scored in the far left-hand column, with subsequent verbalizations tallied in succeeding columns from left to right across the page.

The language that typically occurs when a mother is interacting with her child does not neatly fall into identifiable units. There are, for example, many occurrences of incomplete sentences, single word utterances, and interrupted speech. In order to code the language, it is necessary to impose some sort of order on these verbalizations.

To facilitate the process of scoring the 8-Block tapes, the coders should consider whether a verbalization is a complete sentence or a phrase. Each complete sentence must be coded as a single unit. For example, the sequence "These are small. These blocks go here.", consists of two distinct sentences and each one would be scored according to the coding categories. Phrases are coded as separate units only if they are separated from a sentence or other phrase by a pause of one second or more. If there is no pause between phrases, the connected phrases are scored as one unit. For example, "The tall circle...(pause)..., Where does the tall circle go?" would be coded as two verbalizations. If the pause after "circle" were less than one second, this would be coded as one verbalization.

If sentences or phrases are connected by "and", "or", "but", or "so", they are scored as one unit, unless there is a one second pause between them. For example, "Is this big or is this little?" without a pause would be tallied as one unit. "Is this big...(pause)...or is this little?" contains two units and each one should be coded. A stop watch calibrated to 1/5 second should be used for determining the length of pauses when they are not clearly longer than one second.

Figure 1. Categories Used in Coding Mother-Child Verbal Interactions

MOTHER CATEGORIES	CHILD CATEGORIES
Request Talking	Talk About
Height	Height
Mark	Mark
Height & Mark	Height & Mark
Unclassified	Unclassified
Request Understanding	---
Height	Direct Request
Mark	Respond
Height & Mark	Comments
Unclassified	Task Irrelevancy
Request Placement	Acknowledge
Height	I Don't Know
Mark	Refuse, Reject
Height & Mark	
Unclassified	
Talk About	
Height	
Mark	
Height & Mark	
Unclassified	
Future Task	

Direct Request	
Respond	
Comments	
Task Irrelevancy	
Praise	
Acknowledge	
Encourage	
Correction/Alone	
Correction/Reason	
Height	
Mark	
Height & Mark	
Correction/Question	
Height	
Mark	
Height & Mark	
Threaten, Demean	
Bribe	

I. MOTHER CATEGORIES

A. Request Talking

The Request Talking category is for requests by the mother to the child asking for specific verbal responses about the task.

Phrases to be tallied under Request Talking-Height are those asking the child to verbalize the height dimension. The following phrases, for example, require one tally under Request Talking-Height:

- "Are these big or little blocks?" (It is assumed that the response the mother is attempting to elicit from the child is "big" or "little" and not "yes" or "no".)
- "What size is this one?"
- "Was it a big one, or was it a little one?"

Sentences to be tallied under Request Talking-Mark:

- "Is this X or is this 0?"
- "What's this got?"
- "What's that on top of the block?"
- "And it's got..."

For a sentence to be tallied under Request Talking-Height and Mark, the mother must refer to both dimensions of the blocks, while asking the child to verbalize at least one dimension. For example:

- "Is this little or big with X or 0?"
  (Mother is asking child to verbalize both dimensions.)
- "These are small and they've got what?"
  (Mother refers to both while asking child to verbalize only one.)
- "This is how tall and it's got what on top?"
- "This has an 0 and it's how tall?"
- "This is big and what's on top?"

  (A pause between "This is big...(pause)...and what's on top?" would make it necessary to score "This is big" under Talks About-Height and "and what's on top?" under Request Talking-Mark.)

Phrases to be tallied once under Request Talking-Unclassified:

- "What's the difference between these two blocks?"
- "How's this one the same as that one?"

Phrases containing "say it" or "tell me" are usually tallied under Request Talking:

- "Tell me what this one is... . Say it."
  (Two tallies under Request Talking-Unclassified are required because these are two distinct sentences.)
- "Tell me where you think this belongs."
  (One tally under Request Talking-Unclassified.)

B. Request Understanding

Request Understanding is for requests in which the mother attempts to evoke a verbal or non-verbal response from the child, but she does not seek a specific height or mark response. For example, "Is this one little?" requires a "yes" or "no" answer from the child and is thus tallied under Request Understanding-Height. Sentences scored in the Request Understanding category must deal specifically with the task and must request that the child understand a certain facet of the task.

Examples of sentences to be tallied under Request Understanding-Height:

- "Point to the big one."
- "Look at the baby blocks."
- "Can you show Mommy which blocks are little?"
- "This is bigger than that, isn't it?"
- "Give Mommy the little ones."
- "If you put them side by side, Danny, see that's a lot smaller than that, isn't it?"
- "All these blocks are tall, right?"
- "Take the little one out of here."
- "The big one?"
- "Do you want to look at the little blocks for a minute?"
- "Can Ricky find another big block for Mommy?"
- "Isn't that tiny?"
- "All these blocks, you see they're small?"

Sentences containing "tell me" are usually tallied under Request Talking; however, an example of one to be scored under Request Understanding-Height is:

- "Tell Mommy where the tall one is."

Examples of phrases to be tallied under Request Understanding-Mark:

- "Is this an X?"
- "Where's the other zero one?"
- "See the X block over here?"
- "Look at the top."
- "Does that have an 0 on it?"
- "This is a zero and this is an X, right?"
- "The marks, see them?"
- "Mommy wants you to take the blocks over here that are marked the same."
- "Now you're going to take these two blocks--see the circles?--and match them together." (No pause, one tally.)

Phrases to be tallied under Request Understanding-Height and Mark:

- "Find the little X."
- "Are these the same height and do they have the same mark on top?"
- "Show me the Mommy blocks that have 0's."
- "Take the tall ones and match them with the X's."

Phrases to be tallied under Request Understanding-Unclassified:

- "Is this one in the right place?"
- "What about if I do this?"
- "You have too many people in this house and not enough people in this house, don't you?"
- "See these blocks?" (Request Understanding because "these" was stressed by mother, suggesting she wanted the child to take note of a particular group of blocks.)
- "Then that doesn't go there, does it?"
- "Look at this and look at this."
- "Look right here."
- "Think you can remember now?"
- "Do you see where they go on the board?"
- "Lannie, does it go here or over here?"
- "Can you find the other one that goes with this one?" (This could also be a placement request, depending upon the context.)

- "Look at all the blocks and see which ones have pencil marks on them."
- "What are you going to do with these?"
- "Doesn't it belong here?"
- "See how it would go?"
- "Why don't you pick these up?"
- "Do you see all these here?"
- "Now I want you to finish taking these blocks."
- "Now let's try it again."
- "Get the other ones."
- "Try another one."
- "Does it go here or here?"
- "Why don't you pick these up?"
- "O.K., but what about if I do this?"
- "Try it again."
- "See these blocks, Billy? See where they go? Do you see where they go on the board?" (Three tallies under Request Understanding-Unclassified.)

You must occasionally score sentences containing "tell me" under Request Understanding rather than Request Talking. The following, for example, should be scored once under Request Understanding-Unclassified:

- "I want you to tell me if they're the same."
- "Tell me if you think they belong here."

C. Request Placement

Sentences in which the mother asks the child to "put" or "place" blocks are scored under Request Placement. It includes statements asking the child "where" a block goes, and phrases by the mother using "match", "stack", or any other word of the mother's choice as long as it is clear she is asking for specific block placement.

The following phrases require one tally under Request Placement-Height:

- "Put the tall blocks where they belong."
- "Where do the big blocks go?"
- "Can you take and put the big ones--put them here?"
- "Match the Mommy blocks and baby blocks together on board."

Sentences to be scored under Request Placement-Mark:

- "Put it with the 0's."
- "I want you to put all the X's together and all of the 0's."
- "Place all the X's in one square."
- "Where does the circle block go?"

A sentence such as "Match these blocks with the 0's on the board," is clearly a placement request because of the words "on the board" and should be scored once under Request Placement-Mark. A less specific sentence such as "Match these blocks with the 0's," must be scored under Request Understanding-Mark, since the mother does not give any information other than she wants "0" blocks matched.

Request Placement is always the more specific category and statements must clearly be requests for placement to be scored here.

Examples of sentences to be tallied under Request Placement-Height and Mark:

- "You have to put it according to the size, Danny, and the mark on top."
- "Put them where you think they should go, by height and by mark, okay?"
- "Put the X's with the other tall X's."
- "The tall circle, where does the tall circle go?"
- "I want you to take the big one with an X and one little one with an X and put them on a square."
- "Stack the short 0's together."
  (Where stack in a given context is clearly used in place of "put". If stack is used in any other sense it should be tallied under Request Understanding-Height and Mark.)
- "Now Mommy's going to take them off and see if you can put them back on so that the big one's here and the little one's here, and the letters have to be the same."
  (One tally because there is no pause.)

The following phrases are examples of those to be tallied under Request Placement-Unclassified:

- "What goes up here?"
- "Now put these where they belong."
- "Now, find the other one that goes here because Mommy's awfully lonesome and she doesn't have her baby."

- "Where does it go?"
- "Set it all the way in the box."
- "Put this where...where does this one go?"
- "Take and match these up with the ones here."
  (Depending upon context, this is usually a placement request.)
- "Show Mommy where this one goes."
- "Can you find the other one that goes with this one?"
- "I want you to finish taking these blocks, and put them where they belong."
- "Can you do that one?"
- "Now put this block on the board. O. K., some more, you've got three more to do."
  (Two tallies under Request Placement-Unclassified because there are two distinct phrases and it's very clear that the second phrase is a placement request since it immediately follows the first placement request.)
- "Why don't you pick these up and put them where they go?"
- "Now try another one."
  (This is scored under Request Placement if it is clear from the context that mother actually requests placement.)

D. Talk About

Sentences to be scored in this category are declarative statements by the mother which relate specifically to the 8-Block Task.

Sentences to be scored under Talk About-Height:

- "These tall blocks go with the other tall blocks."
- "These are little, too."
- "A big one, not a little one, a big one."
- "Two are tall and two are short."

Examples of sentences to be scored under Talk About-Mark:

- "This is an X and this is an O."
- "Yes, like the circle."
- "These are O's, like cheerios."
- "You know what X is."
- "These blocks are marked with X's and O's."

- "That's a zero, zero, zero."
- "That's X."
- "...with the X's on them."

Sentences to be tallied once under Talk About-Height and Mark:

- "This is small with an X."
- "...and the large blocks with X's in that corner."
- "These tall blocks have 0 on top."
- "I'm not telling you which is the small 0."
- "The tall X, that's the short one."
- "The little one, little one with a zero."
- "See, that's a big one, yes, but it doesn't have an 0 on it."
  (Mother is telling child; if intonation indicated that she is actually asking child, it would be Request Understanding.)

Sentences to be tallied once under Talk About-Unclassified:

- "This block doesn't match those blocks."
- "That's what Mom wanted you to do."
- "The ones that are over here."
- "Mommy's going to take all these blocks and mix them up."
- "And this one."
- "C'mon, we have to put these blocks on the board."
- "Now here's another one."
- "I'm not going to tell you."
- "Now another one."
- "We're going to play it one more time."
- "You're not even paying attention."

Future Task is an orientation statement in which the mother introduces the task or "game" to the child. Examples of Talk About-Future Task are:

- "Mommy wants you to play a game with her and we're going to play with blocks."
- "When you play this game, Sheri, you have to put the X's together and the 0's together, and you have to put the big ones together and the little ones together."
- "Now wait a minute because Mommy's going to tell you something and you're going to listen, O.K.?"

E. Other Mother Categories

Categories below the broken line, with the exception of Correction categories, are for sentences containing less specific information. When you think something the mother says could be tallied in more than one category, always tally it in the more specific category only. For example, "See these tall blocks?" could be tallied under Request Understanding-Height and also under Direct Request. Score it under Request Understanding-Height because this gives more specific information.

Direct Requests are nontask-specific requests by mother to child. Direct requests that require one tally, for example are:

- "Billy, pay attention."
- "O.K., come on."
- "Leave one."
- "Leave that up."
- "Look at the board."
  (Remember, a request for the child to look at a particular aspect or group of blocks is Request Understanding.)
- "Look at the blocks."
- "Look what Mommy's telling you to do."
- "Look at all of them now."

The Respond category is for nontask-specific responses the mother gives to her child's questions. Phrases to receive one tally are:

- "That's a tape recorder."
- "Sure, go get a drink of water."
- "Yes, that's correct."
- "No."

Comments are statements by the mother not related to the 8-Block Sort Task. Comments which require one tally are:

- "It's hot in here."
- "You can build a bridge with the blocks when you're finished."
- "I know you're getting tired."
- "Whoops, you dropped them."

Comments by mother to someone other than child, such as to the tester--"Am I doing this right?"--are not coded at all.

The Task Irrelevancy category is for any comments or questions which refer to the color or shape of blocks (irrelevant dimensions for the 8-Block Sort Task):

- "These blocks are red."
- "Point to the square blocks."
- "Put the same color blocks together."
- "Can you separate the square ones?"

Sentences tallied under Praise are statements which indicate explicitly that the mother feels the child is doing well. Examples of phrases to be scored as Praise are:

- "Good girl."
- "Mommy's proud of you."
- "That's just what Mommy wanted!"
  (If intonation indicates that mother is elated. If not, tally it once under Talk About-Unclassified.)

For all phrases tallied under Praise be sure and tally one time for each indication of praise. "Good. That's a good girl," would thus receive two tallies, as would "I'm proud of you, Jenny! That's a good girl."

Phrases tallied under Acknowledge are simple statements by the mother which recognize something the child has done or said. They are single words, such as:

- "Right."
- "O.K."
- "That's fine."
  (If mother indicates elation, tally once under Praise.)
- "Yeah."

The Encourage category is for nontask-specific statements in which the mother attempts to motivate the child. For example:

- "Keep trying, Susie."
- "I bet you can do it."
- "Come on, I know you can get it."
  (With no pause, tally this once under Encourage.)
- "Go ahead."

Correction/Alone is for phrases of a corrective nature that give no further information. Phrases to be tallied under Correction/Alone are:

- "No, no."
- "Wait a minute."
- "Those don't go there!"
- "Don't do that."
- "No, that's not right."
- "No, you're not going to build a house."
- "You're not looking, Beverly!"
  (Strong intonation makes this correction.)
- "No, not on the board."
- "All right, don't be silly."
- "That's not it."
- "No, where the other one is."
- "No, Joe, these go right here."
- "No, Christy, over here on the square."
- "Just these blocks here, Karrie!"
  (Intonation must indicate that this is a correction.)
- "No, don't start yet. Wait a minute."
  (This must be tallied twice under Correction/Alone because it is two distinct sentences.)

Corrections followed by task-irrelevant reasons are scored under Correction/Alone. For example:

- "No, it's round, not square."
- "Don't put the red blocks with the yellow ones."

If a correction is followed immediately by a placement request, tally the corrective phrase under Correction and tally the placement request under Request Placement. For example:

- "No. Put it with the other tall X's."
  (Tally "No," once under Correction/Alone, and "Put it with the other tall X's," once under Request Placement-Height and Mark.)

- "Wait a minute. Where does it go?"
  (Tally "Wait a minute," under Correction/Alone, and "Where does it go?" under Request Placement-Unclassified.)

Corrections which give a reason for the child's error are scored under Correction/Reason. Examples of statements to be tallied once in this category are:

- "No, no, those don't match the other ones." (If no pause exists, this is tallied once under Correction/Reason. With a pause after "No, no," this first segment should be tallied under Correction/Alone, and "Those don't match the other ones," under Talk About-Unclassified.)

- "No, you don't put them on the line because they live inside the box."

Sentences to be scored in the following three Correction/Reason categories are corrections which mention the dimensions of the blocks.

Sentences to be tallied under Correction/Reason-Height:

- "No, it goes here because it's little."
- "Don't put the baby blocks in that square!" (Mother's intonation must indicate that this is a correction.)

Examples of statements to be tallied under Correction/Reason-Mark:

- "Wait a minute, they don't have X's."
- "No, they don't read the same on top."
- "You don't put that there, honey, cause this one's got the X on top so it goes there."

Sentences to be scored under Correction/Reason-Height and Mark:

- "Not like that, the tall X's go there and the short 0's go there."
- "That's not a small X!"
- "Don't stack the tall 0's here!" ("Stack the short 0's here," on the other hand, would be a Request Placement-Height and Mark because the statement itself is a command and because of the specificity provided by the word "here".)
- "No, it goes here, with the little circles."

Corrections with questions which do not mention specific dimensions of blocks are tallied under Correction/Question. For example:

- "No, does it go like that?"
- "Drait, didn't you hear what I said?"

Corrections with questions which refer to the height dimension are tallied under Correction/Question-Height:

- "No, is that a tall block?"
- "That doesn't go with the small ones, does it?"

Corrections with questions which refer to mark are scored Correction/Question-Mark. For example:

- "That doesn't go with the 0's, does it?"
- "No, don't the crosses go in one square?"

Corrections with questions which refer to both height and mark are tallied under Correction/Question-Height and Mark:

- "Wait, we don't put the tall and short X's together, do we?"
- "No, is it a short 0 block?"

Any time the mother threatens the child or makes a demeaning remark it is tallied under Threaten, Demean. For example:

- "If you don't pay attention you're going to get a spanking."
- "You're such a stupid child."
- "I don't know why you can't do it right."

Statements by the mother in which she attempts to bribe the child are tallied under Bribe:

- "If you play this game with Mommy you can have an ice cream cone when we're through."

A few words or phrases used by mothers are never tallied. These are:

- "Hmm."
- "Uh-huh."
- "What do I do now?

(Comments made to tester or someone other than child are never coded. If you are not sure to

whom a comment is made, tally it as if it is to child.)

Sentence fragments, such as "Put the...", "I said...", etc., are not coded.

II. CHILD CATEGORIES

A. Talks About

All task-specific statements and responses by the child are scored under Talk About. This category for the child is much broader than for the mother in that any time the child mentions a dimension of the blocks it is scored under Talk About, regardless of whether the statement is declarative or interrogative. For example, "These are baby blocks," is tallied once under Talk About-Height, and "Is this X?" is tallied once under Talk About-Mark.

Since few children speak in complete sentences, you should tally all phrases and sentence fragments spoken by the child. Thus, a simple word, such as "this", in response to a mother's task-specific question is scored under Talk About-Unclassified.

Phrases to be scored under Talk About-Height:

- "These are tall."
- "Big red one."
- "Mommy block?"

Statements to be tallied under Talk About-Mark:

- "Looks like a Cheerio."
- "Is it circles?"
- "Airplanes."
- "They're flowers."

Phrases containing both dimensions are tallied under Talk About-Height and Mark:

- "Tall X."
- "Little flowers?"
- "Big with butterflies."

Responses or statements (not questions) by the child which refer to the task, but do not specifically mention height or mark, are scored under Talk About-Unclassified. For example:

- "Right here."
  (When it is in response to task-specific questions by mother.)
- "No."
  (When it is in response to task-specific questions such as "Are these little?")
- "Because you told me to."
  (This might be in response to a question such as "Why did you put it there?)

B. Other Child Categories

Categories below the broken line are again generally less specific than those above it.

All requests which do not mention height or mark are tallied under Direct Request. For example:

- "Mommy."
- "Mommy, Mommy."
  (Two tallies.)
- "Right there?"
- "Why does it go here?"
- "I want to build a train."
- "Do I have to do this?"
- "I want a drink of water."

The Respond category for the child is for responses to questions that are not task-related:

- "Yes."
  (When it is in response to questions such as "Do you want a cookie?)

Comments are nontask-related phrases by the child:

- "Grandma's coming to see us tomorrow."
- "Maria got some blocks for Christmas."

Any time the child mentions the color or shape of blocks (with no mention of height or mark), it is tallied under Task Irrelevancy. For example:

- "I'm putting the red ones together."
- "Square blocks match."

The Acknowledge category is for simple statements of recognition:

- "Yes."
  (Perhaps made in response to something unheard on tape.)

The I Don't Know category is for indications by the child that she or he does not know:

- "I don't know how to do it."

Statements by the child indicating unwillingness to cooperate are scored under Refuse, Reject"

- "I don't want to play with these blocks."
- "I don't like this game!"