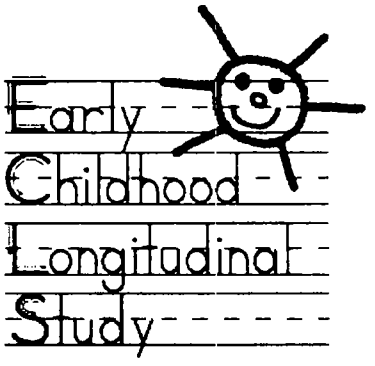
Early Childhood Longitudinal Study

Birth Cohort 2000

IMT/OMB Clearance Package

Prepared by Westat

March 12, 1999



PAPERWORK REDUCTION ACT SUBMISSION

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1. Agency/Subagency originating request

ED/OERI/National Center for Education Statistics

2. OMB control Number

a. ____ – _ ___ b. [ ] NONE _1_ _8_ _5_ _0_ – NEW

3. Type of information collection *(check one)*

a. [x] New collection
b. [ ] Revision of a currently approved collection
c. [ ] Extension of a currently approved collection
d. [ ] Reinstatement, **without change,** of a previously approved collection for which approval has expired
e. [ ] Reinstatement, **with change,** of a previously approved collection for which approval has expired
f. [ ] Existing collection in use without an OMB control number

For b-f, note Item A2 of Supporting Statement instructions

4. Type of review requested *(check one)*

a. [x] Regular
b. [ ] Emergency - Approval requested by: ____/____/____
c. [ ] Delegated

5. Small Entities

Will this information collection have a significant economic impact on a substantial number of small entities? [ ] Yes [x] No

6. Requested Expiration date

a. [x] Three years from approval date
b. [ ] Other – Specify: ___/___/____

7. Title *(10-15 words maximum)*

Early Childhood Longitudinal Study – Birth Cohort 2000, Field Test and Full Scale Data Collection

8. Agency form number(s) *(if applicable)*

9. Keywords

early childhood education, children's health, infant assessment

10. Abstract

The Early Childhood Longitudinal Study – Birth Cohort 2000 (ECLS-B) is a component of the Early Childhood Longitudinal Studies program. Studies also include the Kindergarten Class of 1998-1999, currently underway. The ECLS program responds to increased policy interest in a critical period in the development of children, the years from zero to three. The principal purposes of the study are to assess children's health status and their growth and development in a variety of key domains that are critical for later school readiness and academic achievement. The key domains include physical health and growth, motor development, and social and emotional maturation. The data set will provide a comprehensive and reliable longitudinal data set describing the growth of children from birth through first grade. The data can also be used by a wide range of federal agencies on topics such as maternal and child health; childhood illnesses and disabilities; nonparental child care and early childhood education; health intervention; family economics and composition; welfare dependency; cultural diversity; and food and nutrition.

11. Affected public *(mark primary with "P" and all others that apply with "X")*

a. [x] individuals or households
b. [x] Business or other for-profit
c. [x] Not-for-profit institutions
d. [ ] Farms
e. [ ] Federal Government
f. [x] State, local or Tribal Gov't, SEAs or LEAs

12. Obligation to respond *(Mark primary with "P" and all others that apply with "X")*

a. [x] Voluntary
b. [ ] Required to obtain or retain benefits
c. [ ] Mandatory

13. Annual reporting and recordkeeping hour burden (field test collection)

a. Number of respondents ____2280____
b. Total annual responses ____2280____
1. Percentage of these responses collected electronically ____0%____
c. Total annual hours requested ____3082____
d. Current OMB inventory ____0____
e. Difference (+/-) ____
f. Explanation of difference ____
1. Program change ____
2. Adjustment ____

14. Annual reporting and recordkeeping cost burden *(in thousands of dollars)*

a. Total annualized capital/startup costs ____NA____
b. Total annual costs (O&M) ____NA____
c. Total annualized cost requested ____NA____
d. Current OMB inventory ____NA____
e. Difference (+/-) ____
f. Explanation of difference ____
1. Program change ____
2. Adjustment ____

15. Purpose of information collection *(Mark primary with "P" and all others that apply with "X")*

a. [ ] Application for benefits
b. [ ] Program evaluation
c. [P] General purpose statistics
d. [ ] Audit
e. [x] Program planning or management
f. [x] Research
g. [ ] Regulatory or compliance

16. Frequency of recordkeeping or reporting *(check all that apply)*

a. [ ] Recordkeeping
b. [ ] Third party disclosure
c. [x] Reporting

1. [x] On occasion
2. [ ] Weekly
3. [ ] Monthly
4. [ ] Quarterly
5. [ ] Semi-annually
6. [ ] Annually
7 [ ] Biennially
8. [ ] Other (describe) ____

17. Statistical methods

Does this information collection employ statistical methods?

[x] Yes
[ ] No

18. Agency contact *(person who can best answer questions regarding the content of this submission)*

Name: Edith McArthur

Phone No: (202) 219-1442
Fax No.: (202) 219-1575

19. Certification for Paperwork Reduction Act Submissions

On behalf of this federal agency, I certify that the collection of information encompassed by this request complies with 5 CFR 1320.9.

NOTE: The text of 5 CFR 1320.9, and the related provisions of 5 CFR 1320.8 (b)(3), appear at the end of the instructions. *The certification is to be made with reference to those regulatory provisions as set forth in the instructions.*

The following is a summary of topics, regarding the proposed collection of information, that the certification covers:

(a) It is necessary for the proper performance of agency functions;

(b) It avoids unnecessary duplication;

(c) It reduces burden on small entities;

(d) It uses plain, coherent, and unambiguous terminology that is understandable to respondents;

(e) Its implementation will be consistent and compatible with current reporting and recordkeeping practices;

(f) It indicates the retention periods for recordkeeping requirements;

(g) It informs respondents of the information called for under 5 CFR 1320.8 (b) (3):

- (i) Why the information is being collected;
- (ii) Use of information;
- (iii) Burden estimate;
- (iv) Nature of response (voluntary, required for a benefit, or mandatory);
- (vi) Need to display currently valid OMB control number;

(h) It was developed by an office that has planned and allocated resources for the efficient and effective management and use of information to be collected (see note in Item 19 of the instructions);

(i) It uses effective and efficient statistical survey methodology; and

(j) It makes appropriate use of information technology.

If you are unable to certify compliance with any of these provisions, identify the item below and explain the reason in Item 18 of the Supporting Statement.

Signature of Senior Official or designee	Date

For Department of Education Internal Use

I certify that the information collection being submitted to the Senior Official, or designee, encompassed by this request complies with 5 CFR 1320.9, as summarized above. *(Assistant Secretary signature **required** for emergency reviews.)*

Signature of Assistant Secretary or designee	Date

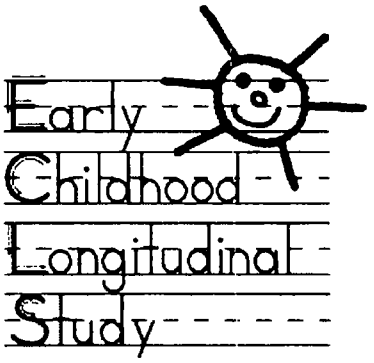
Early Childhood Longitudinal Study

Birth Cohort 2000

IMT/OMB Clearance Package

Prepared by Westat

March 12, 1999



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Part A

Part A: Justification

PART A: JUSTIFICATION

Request for Clearance

This request is for clearance to conduct the first phase of the Early Childhood Longitudinal Study, Birth Cohort 2000 (ECLS-B), covering two data collections, and a two-interval field test of the data collection procedures. The purpose of the field test is to assess the instruments, the operation of the computer-assisted personal interviewing (CAPI) system, and the procedures for collecting interview, standardized infant assessment, videotaped interactions, and physical health measures during home visits when the sampled infants are 9- and 18-months of age. A second purpose of the field test is to evaluate the data collection procedures and instruments for the self-administered questionnaire for resident fathers of 9-month-olds, telephone and/or self-administered questionnaires for nonresident fathers of these children, and the telephone interview for child care providers of 18-month-old children in the sample. Finally, the field test will take place over two time intervals involving the same group of subjects in order to test the sampling and data collection instruments and field procedures from the first to the second data collection period (from 9- to 18-months). The field test will also provide data on the respondent burden and issues related to response rates that may require adjustments in field procedures or measures prior to the full-scale national survey.

Introduction

The Early Childhood Longitudinal Studies, Birth Cohort 2000 (ECLS-B) is a component of the Early Childhood Longitudinal Studies (ECLS) program, sponsored by the National Center for Education Statistics of the U.S. Department of Education. Studies include the Kindergarten Class of 1998-1999 (ECLS-K), currently underway, which is designed to follow 23,000 kindergarten children from 1,000 schools nationwide for six years, through the fifth grade, and the Early Childhood Longitudinal Studies, Birth Cohort 2000 (ECLS-B), which is the focus of this request.

The ECLS program responds to increased policy interest in a critical period in the development of healthy and productive members of our society, that is, the years from "zero to three." The principal purposes of the study are to assess children's health status and their growth and development in a variety of key domains that are critical for later school readiness and academic

achievement. These key domains include physical health and growth, motor development, and social and emotional maturation, as well as cognitive development and (in the later years) academic achievement. The study will gather comprehensive information about a wide range of predictors of children's growth and development, such as family structure and backgrounds, and will also explore intervening factors, such as the prevalence of selected childhood diseases and disabilities and the interventions provided, or transitions to nonparental care and early education programs, kindergarten, and first grade, that may moderate changes in children's growth trajectories as a result of these early influences. While most of the factors that are likely to affect children's growth are known from other studies, this is the first time they will be explored prospectively using a large, nationally-representative sample of infants and that will follow this cohort from birth through the transition to school and beyond.

The goal of the ECLS-B is to provide a comprehensive and reliable longitudinal data set that describes the growth of America's children from birth through first grade. This data set can also be used as a benchmark by a wide range of federal agencies whose interests and jurisdictions span such related areas as maternal and child health, childhood illnesses and disabilities, nonparental child care and early childhood education, health intervention, family economics and composition/structure, welfare dependency, cultural diversity and food and nutrition to compare with existing national surveys that describe and monitor national trends over time. A secondary goal of ECLS-B is to identify factors at various ecological levels (e.g. individual, family, and community) that moderate children's developmental trajectories, health statuses, and ultimately their entry into formal schooling.

The primary sponsor of ECLS-B is the National Center for Education Statistics (NCES) but there are a number of sponsoring agencies including the National Center for Health Statistics (NCHS), the National Institute for Child Health and Human Development (NICHD), and other components of the National Institutes for Health (NIH), the Head Start Bureau of the Agency for Children, Youth, and Families (ACYF) and the Maternal and Child Health Bureau (MCHB) of the Health Resources and Services Administration (HRSA), within the U.S. Department of Health and Human Services (HHS). The Economic Research Service (ERS) of the U.S. Department of Agriculture (USDA) and the Office of Special Education Programs (OSEP) of the Department of Education are also participating as sponsors for the study.

Study Overview

Below is a summary of the design, sample and measurement methods planned for each data collection period, including the field test. More detailed information will be provided at later points in this submission. Copies of all measures and descriptions of the measurement protocols are included in the Appendices.

Design. The design of the ECLS-B calls for 6 waves of data collection from birth through the first grade, with each wave of data involving in-person home visits with the child's primary caregiver (usually the mother). Data collection will occur when the child reaches 9-, 18-, 30- and 48-months of age and, thereafter, at kindergarten and first grade. The present request for clearance covers the first phase of data collection, which consists of the field test, and the 9-, and 18-month national data collection periods. Multiple methods of data collection will be used in this study, including direct child assessments, child physical growth measures (i.e. height and weight), parent-child observations, parent interviews, self-administered questionnaires to resident fathers and telephone interviews with child care providers and nonresident fathers.

Sample. The National Center for Health Statistics (NCHS) will provide the sample of births, as part of a process NCHS is developing with NCES, Westat, and the state vital statistics registrars. The sample of approximately 15,000 births in the Year 2000 will include large numbers of black and Hispanic births, and oversamples of Asians and Pacific Islanders, low birth weight infants, and twins. Approximately 11,800 parents and infants are expected to complete primary care provider interviews and direct assessments in their homes during in the first wave (when the infants are about 9 months old); the parent interview is expected to average about 70 minutes, and the direct assessment about 20 minutes. In addition, the first wave includes a self-administered questionnaire with the children's resident fathers. About 6,225 completed father questionnaires are expected, with the questionnaire requiring about 20 minutes to complete. We anticipate almost 11,000 parents and infants will complete primary care provider interviews and direct assessments at the second wave (when the sampled children are about 18 months old). Data collection activities in the homes for the second wave will also take about 90 minutes of time altogether. The second wave includes a telephone interview with (nonparental) child care providers. About 5,500 completed interviews with child care providers are expected, with each interview averaging approximately 30 minutes.

The present request also covers an additional component only in the field test; that is, a telephone interview with nonresident fathers (fathers who are not living in the same household as the target child) who have maintained some contact with the child or the child's mother. The results from the field test and the availability of additional funds will determine whether this component will be included in the full-scale study. If the survey of nonresident fathers is added to the full-scale study, an addendum will be submitted to cover these activities and to articulate the need for an increase in the overall respondent burden.

Field Test. The field test design is similar to the national study design. It will begin with a sample of 1,500 infants born in January, February, and March, 1999 in 10 sites (to be selected). Data will be collected from about 12,000 field test parents and infants at 9 months, starting in September 1999. About 500 questionnaires will be collected from resident fathers and about 210 nonresident fathers will be located and interviewed. Wave 2 will collect data from the same field test sample of parents and children when the children are 18 months of age, in order to assess response rates over two time periods (and to replicate the field conditions that would occur in the full-scale study). For Wave 2, 1,080 parent interviews will be conducted from June to August, 2000 (nine months after their initial assessment) as well as 370 interviews with child care providers.

9-month Data Collection. Researchers will collect data during visits to respondents' homes. During these home visits, the primary caregiver (usually a parent) will be administered a computer-assisted personal interview (CAPI) lasting approximately 70 minutes, and the child (with parent) will be administered a standardized developmental assessment that will take approximately 20 minutes. As well, anthropometric measures of the target child (weight, length and middle upper-arm circumference as well as head circumference for very low birthweight children) will be completed. The parent will be administered a brief general cognitive ability test and both parent and child will be videotaped in a brief (3 minute) structured teaching task. As well, a self-administered questionnaire will be left at the home for the resident father to complete. Assuming a successful field test and continued support, the full-scale national study will include telephone interviews with nonresident fathers who have maintained at least minimal contact with the child or the child's mother.

18-month Data Collection. When the child selected in Wave 1 reaches 18-months of age, a second home visit will take place involving an interview with the child's primary caregiver (usually a parent), a standardized assessment of the child's development, measures of the child's height, weight, middle-upper arm circumference, and, for premature infants, head circumference, and videotaping of a

mother-child teaching interaction. Additionally, contact information about any child care arrangements will also be obtained and telephone interviews will be conducted with the child's primary child care provider.

Data Use and Implications of the Study. The study design allows for comparisons with data that will be collected by the Early Childhood Longitudinal Study, Kindergarten Class of 1998-1999 (ECLS-K) in selected developmental domains, health outcome areas, and parent and family characteristics. By combining the findings of the two national longitudinal studies, it will be possible to assemble a comprehensive, population-wide picture of children's growth, development, and health from birth through the end of elementary school.

Supplemental health data collection activities, funded by the National Institutes of Health, have the potential for transforming the ECLS-B into a premier data base for the description and analysis of infant health outcomes and their longer-term consequences. The ECLS-B is designed to complement and allow comparisons of selected health variables collected by the National Maternal and Infant Health Survey (NMIHS), National Health Interview Survey (NHIS), the National Survey of Family Growth (NSFG) and the National Health and Nutrition Examination Survey (NHANES), all conducted by the National Center for Health Statistics (NCHS). The study will also provide information on the validity of birth certificate data and on associations between variables gathered on the standard birth certificate and measures of children's subsequent health, growth, and development. This information can be used to construct new indicators, and provide new mechanisms for public health research and program and policy evaluation.

As a prospective study of early development, the ECLS-B will allow researchers to examine how children's progress is affected by factors such as family sociodemographic backgrounds, parental involvement in early learning activities, placement in formal and informal child care arrangements, interparental conflict and family disruption, and experiences in infant and preschool educational programs. With the inclusion of relatively detailed information about the child's health status and health care during the first three years of life, medical researchers can study the prevalence and incidence of a variety of childhood diseases, and their relationship to cognitive, social and language development. The ECLS-B will enable educational policy researchers to analyze how community factors and policies at the state and district levels affect the availability and functioning of child care, preschool and kindergarten programs. Finally, a prospective study of this size presents opportunities for examining how child

characteristics and family and school environments jointly determine children's growth and development in later years.

Survey Topics and Instruments

The study instruments focus on the linkage between a set of dependent variables that define school readiness at specific time periods from nine-months until the child reaches first grade, and a set of independent or predictor variables that have been identified in previous research as influencing the child's school readiness, or that serve as mediating or intervening variables. While many previous and existing studies have followed a similar design, and have provided useful and interesting results, ECLS-B is pre-eminent in its inclusion of a comprehensive set of factors that span many studies and that are known to be related, or are suspected as influencing, the child's growth. It is the first study of its kind to include such a broad array of mediating variables for a national-scale sample, and to collect this array of information prospectively, while development proceeds. By obtaining measures of these factors across repeated periods of time covering the early years through first grade, the study will be able to identify not only correlational links but also will be able to explicate some causal factors and identify key precursors to later growth milestones.

The mediating and intervening variables measured in this study are designed to assess a range of family resources and risk factors, to be described shortly, as well as the family's use of health and community services and interventions. The term "family resources and risk factors" is an umbrella for a broad array of factors that function in this study as either predictors of developmental status and growth (in the case of those that are antecedent to growth) or as mediators of later school achievement (in the case of those that are measured while growth is unfolding). In this section, we first consider school readiness as a key survey topic and describe how it will be measured in this study. Then, we describe the specific family resources and risk factors selected for this study and how they will be operationalized.

School Readiness

In this study, school readiness is considered as a multi-faceted, developmental process rather than as a static outcome rooted in selected domains of development. It is not confined in time to an endpoint or condition nor is it solely defined in terms of early cognitive development and preacademic

knowledge and skills. While there is not universal agreement on the utility of school readiness as a concept (Crnic and Lamberty, 1994; Kagan, 1996), or on what criteria should be used to measure it (Eisenhart and Graue, 1990; Ellwein et al., 1991), many of the issues may be more semantic than real. The ECLS-B conceptualizes school readiness as a process that takes place across all key developmental domains, including physical well-being/health, social and emotional development, language acquisition and emerging literacy, and cognitive development (Goal One Technical Planning Group of the National Education Goals Panel, 1993).

The measures of development that we will be using in the 9- and 18-month data collection periods (and the field test) to operationalize school readiness use standardized, direct assessments of the child's growth and development in the key domains, supplemented by reports from parents and child care providers. The direct child assessment is designed to directly assess several key constructs in child development including language, cognitive, motor and social development. The mental and motor scales of the Bayley Scales of Infant Development (BSID-II) measure gross and fine motor development, and receptive and expressive language skills. The Behavioral Rating Scale (BRS) of the BSID-II includes interviewer observations of the child's task orientation and engagement, emotional regulation, and motor quality, all of which are related to temperament and are early precursors to the child's approach to learning. The Nursing Child Assessment Teaching Scale (NCATS) captures caregivers' sensitivity to infant cues, their fostering of social and cognitive growth and the child's responsiveness to the caregiver. Anthropometric measures (weight, length/height, middle upper-arm circumference and, for very low birthweight babies, head circumference) will also be obtained using standard protocols that have been used in other national studies. These measures will be administered at both the 9- and 18-month home visits. Justification for the selection of these measures is provided in Part C of this request. Detailed protocols for the administration of the direct child assessment and parent-child interaction measures are provided in Appendix B.

An additional parent-completed measure will be administered at the 18-month home visit. The Attachment Q-Sort, a card-sorting task completed by the parent with instructions from the interviewer, measures attachment security. Attachment is an important, early indicator of social-emotional development that emerges in the 12- to 18-month period for most children. Justification for the selection of this measure is given in Part C of this request, and a detailed protocol can be found in Appendix B.

In addition to the above direct assessments and interactional tasks, the study will feature a computer-assisted personal interview (CAPI) parent instrument administered at both the 9- and 18-month data collection periods. The parent instruments will collect much information related to resources and risks, discussed next, but will also be used to supplement the direct child assessments and interactions to collect data related to the school readiness. The 9-month parent instrument collects measures related to school readiness that have been used in other large-scale national studies, including the child's physical well-being and health status, and the child's temperament. Justifications for these constructs as measures of child development and school readiness for the 9-month parent instrument are described in Part C of this request. The specific items are included in the attached copy of the 9-month parent instrument, which can be found in Appendix A.

The 18-month parent instrument includes additional items related to a key aspect of school readiness, that is, emergent literacy and language development, since this is the age at which a good deal of early language development typically occurs. The measurement of language development in the 18-month parent instrument consists of items from standardized measures such as the MacArthur Communication Development Inventory, and the Minnesota Child Development Inventory. Justification for these measures can be found in Part C of this request, with the items included as part of the 18-month parent instrument, a copy of which can be found in Appendix F.

Following the home visits at each time period, the interviewer will complete a set of observational ratings of the home environment, the child's behavior during the administration of the Bayley, and, at 18-months, a separate interviewer-completed Attachment Q-Sort. The justification for the home environment and behavior ratings for both the 9- and 18-month data collections can be found in Part C of this request. The interviewer-completed Attachment Q-Sort uses the same items as those included in the parent-completed version and the justification can also be found in Part C of this request. Detailed protocols and copies of all interviewer-completed observations for both the 9- and 18-month data collections can be found in Appendix C.

A telephone interview with the child's primary child care provider, if the child is receiving child care from someone who is not the parent, will be administered as part of the 18-month data collection. For families who have an outside child care arrangement, we will contact, with the parent's permission, the individual who provides the most amount of child care during a typical week. It is expected that child care providers will come from all forms of formal and informal arrangements, such as center-based child care, family home child care, relative, and in-home care. The child care provider

interview consists of items related to school readiness, including similar types of questions related to the child's growth and development that are asked of the parent at the 18-month home visit, including the language and literacy items, and the child's achievement of developmental milestones. The child care provider will also be asked information that can be used to ascertain the quality of the child care environment, which is an important component of school readiness.

In ECLS-B, school readiness is considered as a function of both the individual and the environment. It is not necessarily only what the child brings as a set of competencies that likely lead to successful entry into school. It also focuses on the ecological context and the types of environments that are most conducive to optimal trajectories of development. The quality of the learning environments in alternate child care settings and preschools experienced by the growing child from infancy through entry into formal schooling will also be measured, in the first phase of the study, by the child care provider telephone interviews when the child is 18-months of age. The telephone interview will ask about licensing, group size, the providers' backgrounds and education, and the quality of their relationships with the children in their care and the quality of their relationships with the parents. Justification for the selection of these items for the Child Care Provider interview is provided in Part C of this request, and a copy of the child care provider interview can be found in Appendix G.

School readiness as a process highlights the nature of the child's growth over time and developing competencies that serve as preparation for entry into formal schooling. By considering school readiness as a process, the study will focus on physical and psychological growth and well-being at regular intervals of time and track changes across the first six years of development. Thus, school readiness in this study is conceived as a measure that may fluctuate as a function of different life experiences, family backgrounds and developmental tasks that occur at various ages prior to, and including, the child's entry into formal schooling.

Family Resources and Risks

Family resources and risk factors is another useful paradigm for this study because it covers virtually all factors that serve as contexts influencing, either directly or indirectly, the child's health, well-being and development. These resources and risk factors, and the balance between resources and risks, can change across time and thus must be assessed at various time points as the child's school readiness and health status is tracked. Additionally, family resources and risk factors can have different influences

on the child's growth and well-being at each age period but they can also interact with the child's own characteristics and developmental tasks at a given age to determine movement towards increasing growth and well-being. Finally, by documenting those factors in the child's environment that, at different ecological levels, mediate growth at various time periods, the ECLS-B can answer some key policy questions.

"Resources" refer to a set of factors that enhance the child's growth and development, such as the number of parents (or substitute caregivers) who are available to care for the child; the amount of time these parents can devote to childrearing; the education level and functional literacy level of the parents; the amount of discretionary income the family has; the availability and quality of alternate care arrangements; prenatal and postnatal health care and early family health practices; and the quantity and quality of learning materials in the home. "Risk factors" consist of conditions and events that pose threats to optimal development, such as persistent poverty; maternal and child health status including the presence of disabilities or health-related limitations; minority language status; family turbulence, interparental conflict and family disruption; prolonged separation of the child from the primary caregiver during the early years of life; environmental hazards in the home or living in unsafe neighborhoods; and parental mental health problems or substance abuse.

The focus on resources and risk factors reflects the repeated finding of large-scale family studies that children's early health and development and later school achievement are positively related to the above-listed resources that families are able to devote to childrearing and negatively related to those risk factors that are present in the home environment (Pallas, Natriello, and McDill, 1989; West and Brick, 1991; Zill, Moore, Smith, Stief, and Coiro, 1995). The more resources and the fewer risk factors there are in the child's home environment, the better the prospects that the child will grow vigorously, develop needed skills and behaviors that adequately prepare the child to learn, and, eventually, do well in school.

In this approach, resources enable the child's parents to supply intellectual stimulation and emotional support that facilitate healthy development. Resources also provide protection against environmental "insult" caused by risk factors. If the available resources are insufficient to stimulate development sufficiently or protect against pervasive risk factors, the child's developmental trajectory may be adversely affected. This may occur either because the child is repeatedly exposed to one or two risk factors, or because the child is exposed to multiple risk factors.

While there is no guarantee that adverse effects will occur, there is an increased probability that vulnerabilities will form whenever the risk factors exceed the individual's and family's level of resources. These vulnerabilities do not necessarily lead to negative effects but rather should be viewed as moving the child's developmental trajectory off-course from optimal towards sub-optimal pathways. Over time, these vulnerabilities may increase and become sustained through the presence of additional risk factors if there is no countervailing support from resources. At various points in time, as these risks and vulnerabilities are documented and monitored, we would expect to see less than optimal development in social, cognitive and language domains and in the child's styles of learning (such as curiosity and exploration).

This view of resources and risk factors serves as a useful guide for the ECLS-B design and instrumentation for several reasons. First, it takes into account an ecological framework that considers multiple pathways at different levels of the child's environment, as well as the child's own predispositions and characteristics. Second, it can be incorporated into a "whole child" view of school readiness so that broader developmental domains and health may be considered. Finally, and more importantly, it allows for a long-term investigation that crosses developmental stages and studies the impact of transitions and the effects on vulnerabilities at multiple points in time.

The content areas in the proposed ECLS-B instrument design that operationalize specific family resources and risk factors known from previous studies to have an impact on child development are summarized in Table A-1, below.

Resources and risk factors are collected as part of the 9- and 18-month parent interview instruments, the 9-month resident father questionnaire, the 9-month nonresident father instrument (field test only), and the 18-month child care provider interview. Justification for the measures included in these instruments can be found in Part C of this request. Copies of these instruments can be found in Appendices A (9-month parent interview), D (Resident father self-administered questionnaire), E (nonresident father interview) and G (child care provider interview).

Table A-1. Link between ECLS-B instrument design and conceptual framework of family resources and risk factors

Instrument	Family resources	Risk factors
Parent Interview	■ Food and nutrition ■ Early child and family health care practices and neonatal care ■ Family health and household food sufficiency ■ Maternal literacy skills and educational attainment ■ Resident father involvement in child's learning and activities ■ Expectations for child development ■ Home educational activities and child-rearing environment ■ Quality, stability, and characteristics of nonparental child care ■ Social support and support for parenting ■ Community support, availability of resources, utilization of services, and intervention programs ■ Family routines and division of child care responsibilities ■ Household income	■ Pregnancy and birth complications ■ Maternal and child health, disabilities, or health-related limitations ■ Maternal background ■ Household composition and stability ■ Marriage/partner quality and stability ■ Mother's childbearing history ■ Parenting behavior and attitudes ■ Contact and involvement of nonresident biological father ■ Stressful life events and extended parental separations from child ■ Neighborhood quality and safety ■ Receipt of welfare and other income transfers
Resident Father Self-Administered Questionnaire	■ Father's activities with child ■ Father's social support network ■ Attitudes about being a father ■ Father's education, cognitive ability, and employment	■ Father's prenatal and neonatal experiences ■ Father's fertility and marital/partner history ■ Father's health, mental health, and stressful life events ■ Father's background and family of origin ■ Father's use of alcohol and other substances
Nonresident Father Telephone Interview	■ Father's frequency and type of contact with the child ■ Custody and child support arrangements ■ Attitudes about being a father ■ Father's education, cognitive ability, and employment	■ Father's fertility and marital/partner history ■ Father's health, mental health, and stressful life events ■ Father's use of alcohol and other substances
Child Care Provider	■ Parental involvement with child care provider ■ Child's time in care ■ Learning environment and activities with child	■ Program quality including structural factors, process measures, and staffing ■ Family backgrounds ■ Caregiver background, experience, and training

A.1 Circumstances Necessitating Collection of Information

NCES has as its legislative mission the collection and publication of data on the condition of education in the Nation. The ECLS-B is being undertaken in compliance with this mandate, as stated in section 404 of the National Education Statistics Act of 1994 (20 U.S.C. 9003):

"The duties of the Center are to collect, and analyze and disseminate statistics and other information related to education in the United States and in other nations, including ... conducting longitudinal studies, as well as regular and special surveys and data collections, necessary to report on the condition and progress of education ..."

The research questions that the ECLS-B has been designed to address have been partly framed by the current public policy climate, particularly policy-related issues in several key areas. Major shifts have occurred recently in several areas of government policy that have potential impacts on the lives of young children, including welfare reform, paternity establishment and child support enforcement, health care policy, and publicly subsidized child care and early education programs. With the implementation of these dramatic changes in social welfare and health programs comes the need to assess the impact of these changes. There are calls for more and better data at both the national and state levels with which to make complex decisions about the care and education of the nation's children. The ECLS-B will be extremely useful as a tool to help appraise the long-term impact of changes in social welfare and health programs, on children and families, although it is not itself intended to be an evaluation study.

The early experiences of children born in the 1990's may differ in significant ways from those of children born in previous decades. Children in the 1990's are more likely to live in young, female-headed, single-parent families, to live in poverty, to live in households with limited English proficiency, and to receive inadequate health care and poor nutrition. At the same time, schools are being asked to do more and more with fewer resources to assist children in easing the transition into kindergarten and to help families participate in their children's education. Changes in state health insurance policies, particularly the increased use of managed care plans, may reduce the availability and access of routine medical and dental care, immunizations, and health promotion interventions for children from low-income or immigrant families. These changes have contributed to an erosion in the economic and social capital available to nurture children in families and reduce the availability and utilization of neighborhood and community resources to assist these families in their child development, growth and socialization tasks.

Another policy issue driving the research questions and the choice of measures is the increased numbers of children who experience out-of-home child care and who participate in early childhood education programs before they reach the age of compulsory school attendance. In the 1990's, kindergarten attendance is nearly universal and the majority of primary school children have had at least one organized group experience, such as child care or preschool, prior to starting first grade (West, Hausken, Chandler and Collins, 1992). There are questions about the quality of these programs and the stability in out-of-home child care arrangements during the early years and how these are related to children's growth and development. While most studies have looked at child care and child well-being at a single point in time or, at best, two points in time, the ECLS-B will afford an opportunity to track children's experiences in alternate care and preschool education programs across multiple time points over the first six years of life.

Additionally, there are many studies funded by federal agencies, particularly in the health area, that attempt to associate family and environmental variables with child outcomes. While these studies are generally well-designed and provide good internal validity, their samples are not usually representative of the national population, thus limiting their generalizability. *There is currently no longitudinal database on child health and development during the first years of life based on a nationally representative sample of U. S. births*. Section A.5 ("Suitability of Existing Data") summarizes the major national studies of children's health and development and identifies the gaps in information that the ECLS-B is designed to fill. The ECLS-B will produce a nationally representative and prospective dataset of prevalence and incidence measures of childhood diseases, disabilities and other health outcomes and their link to child co-morbidities and growth. This dataset establishes benchmark data for monitoring health and well-being trends over time which, among other uses, will assist in evaluating the generalizability of NIH-supported studies that associate family variables with child health outcomes.

Finally, there is considerable variation across states and counties in the speed and manner with which policy changes in early childhood education are being implemented. There is currently a movement toward state-wide initiatives in providing preschool education programs for children from low-income families and these new initiatives may influence, and be influenced by, national policies for child care and preschool education. The ECLS-B could be linked with data sets on state and local policies to help clarify the impact of these policy changes on children's development and well-being.

Strengths of the Study

The strength of the ECLS-B is that it combines elements of prospective, cross-sectional and longitudinal designs. It is a prospective study of the influence of early care experiences on later development and achievement. At each measurement period, the study will provide a cross-sectional snapshot of a representative sample of children and their families across the United States. By providing multiple points of measurement across a six-year period, ECLS-B is geared towards the study of individual growth over time, and of occurrences early in the child's life that are associated with changes in growth rates. Other strengths of the study include:

Contemporaneous Measurement of Early Experiences and Development. Data will be collected contemporaneously, that is, at the time early experiences are occurring and growth is unfolding. This will provide more accurate appraisal of the child's cumulative experience between birth and school entry. Since assessments will occur when the child is 9-, 18-, 30-, and 48-months of age, and yearly thereafter through first grade, information on the attainment of developmental milestones will be collected as those milestones are being reached, rather than being recalled retrospectively. This design feature will produce more valid measurement of each child's current health and developmental status. It will also enable researchers to plot growth curves and make stronger causal inferences because earlier factors can be related to changes in growth at subsequent age periods.

Comparability with ECLS-K and Other National D Sources. As mentioned previously the ECLS-B instrument design plan is designed to link with data collected in the Early Childhood Longitudinal Study, Kindergarten Class of 1998-1999 (ECLS-K) in selected developmental domains, health outcome areas, and parent and family characteristics. By combining the findings of the two national longitudinal studies, it will be possible to assemble a national, comprehensive picture of children's growth, development, and health from birth through the end of elementary school.

The ECLS-B is designed to complement and allow comparisons of selected health variables collected by the National Maternal and Infant Health Survey (NMIHS), National Health Interview Survey (NHIS), and the National Health and Nutrition Examination Survey (NHANES), all conducted by the National Center for Health Statistics (NCHS). The study will also provide information on the validity of birth certificate data and on associations between variables gathered on the standard birth certificate and measures of children's subsequent health, growth, and development. This information can be used to construct new indicators, and provide new mechanisms for public health research and program and policy

evaluation. Finally, the study results can be compared with international longitudinal studies including the Canadian National Longitudinal Study of Children and Youth, the British Cohort Studies, and the Longitudinal Surveys of Australian Youth (LSAY).

Multiple Methods and Multiple Measures. Parental report data will be supported through judicious use of direct child assessments, physical growth measures, and reports at various measurement intervals from alternate caregivers, fathers and later, teachers. The large sample size will improve the reliability of the measurement systems and the repeated measures across time will provide for use of sophisticated analytic techniques such as multilevel modeling, growth curve analyses, and structural equation modeling to study factors at different ecological levels within and across time periods.

Large Subsamples of Major Social Groups. The ECLS-B sample design is geared towards obtaining a representative sample of children across the United States from a wide variety of cultural backgrounds. By including substantial subsamples of African-American, Asian, and Hispanic-American children, and perhaps of American Indian children as well, the ECLS will present many possibilities for studying cultural diversity and ethnic variations in child-rearing environments, early education in the home, children's health and developmental patterns, and the educational resources and opportunities that different groups are afforded in the U.S. In addition, the low level of clustering will produce large effective sample sizes overall and by subgroup.

Oversamples of Low Birthweight Infants and Multiple Births. Additionally, the ECLS-B will include oversamples of low-birthweight children and twins. The oversamples of low-birthweight children will ensure sufficient numbers to conduct independent as well as pooled analyses of their health and development across the first six years of life and how their growth curves may differ from those of children in the normal birthweight range. Low birthweight is also used in this study as a proxy indicator for potential disabling conditions so that sufficient numbers of low birthweight infants will allow for prospective analyses of the health and development of children with such conditions, as well as study of their entry into and experiences in early intervention and special education programs.

The oversample of twins in the study provides another important application for the data collected by ECLS-B, one that will significantly increase the value of this study. Few twin studies have a sufficiently large and representative enough sample to make conclusions that can be generalized to the population of twins. The oversample consists only of twins and not multiples in order to improve the estimates. Within the relatively large sample of "reared together" environments that will comprise the

experience of twins in ECLS-B, the study will provide an important addition to the twin research literature by providing some estimates of the genetic and environmental influences on human development, and by studying differences between mono- and di-zygotic twins and how "twinship" impacts the child-rearing and home educational environment and, hence, the childrens' development and growth.

In research with twins, assuming there is a sufficiently large sample of both identical and fraternal twins, we can estimate the heritability of a given trait by doubling the difference between the identical and fraternal twin correlations on a given trait (Plomin, 1990). This number provides a good estimate of the proportion of phenotypic variance that can be accounted for by genetic factors, that is, heritability. Further, because identical twins are always of the same sex, we would use same-sex fraternal twins for comparison with identical twins, to estimate the heritability of a given trait or factor. Since 1/3 of all twins are same-sex fraternal and 1/3 are identical, we would have almost equal numbers, and sufficient sample size (assuming a total twin sample of 1,590 children or 265 twin pairs per subgroup) with which to conduct this analysis. The large number of twins that an oversample provides will also provide a premier database of twins reared together to describe developmental sequelae for twins and the factors in environments that are linked to differential developmental outcomes that distinguish twins from non-twins. The only limiting factor from the perspective of studying heritability comes from the lack of a sufficient number of twins reared apart, thereby placing some limits on the range of caregiving environments that are expected to vary in the sample.

From a methodological standpoint, the study procedures employed in this study to accurately determine the zygosity of the twins (to be described later) will advance the field and provide for a low error rate, thereby sharpening the determination of differences between mono- and dizygotic twins. By allowing for a more precise classification of twins, a wider variety of study topics can be analyzed with these data. Topics include, but are not limited to, the following current areas of debate in twin research and policies related to twins:

- How identical and fraternal twins compare in their growth and development over time,
- Differences in birth weight and morbidity, mortality, use of assisted technology, and costs of raising twins,
- The influence of shared and non-shared family environments on children's development,

- The quality of in-home and alternate child care settings that constrain or enable twins to overcome the developmental disadvantage of their status compared with singleton children,

- The differential attachments of twins to parents, the hierarchy of attachment figures for twins and the study of concordance in attachment patterns of twins reared together,

- The role of fathers in nurturing twin children's development and how these are similar or dissimilar to the father's role in the growth of singleton children.

Summary of Circumstances Necessitating Data Collection

To summarize, the present study is needed for the following reasons:

- Many of the events that affect children's academic performance occur before a child ever sets foot in a classroom.

- Children's intellectual growth occurs at a faster rate during the preschool years than during the school years.

- Rapid changes have been occurring in marriage, childbearing, and parental employment patterns. These changes are having profound effects on the family environments of young children.

- Differential fertility and high immigration rates have produced large changes in the racial, ethnic, and linguistic make-up of the young child population.

- Major shifts have occurred in federal and state policies on health care, welfare, child support, and other areas that affect families with young children. There is widespread interest in understanding the possible effects of these policy shifts on the well-being of children.

- There is currently no longitudinal data base on child health and development during the first years of life based on a nationally representative sample of births. Such a data base would be of great interest to scholars and policy analysts from a wide variety of disciplines and specialty areas.

A.2 Purposes and Uses of the Data

The measures selected for the ECLS-B come from a number of national and international studies of children's health and development, including, the National Household Education Survey (NHES), the National Longitudinal Surveys (NLSY), the National Educational Longitudinal Survey

(NELS), the National Evaluation of the Comprehensive Child Development Program (CCDP), the Head Start Family and Child Experiences Survey (FACES), the National Evaluation of Early Head Start, the National Early Intervention Longitudinal Survey (NEILS), the MacArthur Longitudinal Twin Study, the National Institutes of Child and Human Development (NICHD) Study of Early Child Care, the National Maternal and Infant Health Survey (NMIHS), National Health Interview Survey (NHIS), the National Survey of Family Growth (NSFG), and the National Health and Nutrition Examination Survey (NHANES). These latter four studies are conducted by the National Center for Health Statistics (NCHS).

As noted earlier, data will be linked with those collected by the Early Childhood Longitudinal Study, Kindergarten Class of 1998-1999 (ECLS-K) to provide a comprehensive picture of children's growth, development, and health from birth through the grade five. In order to allow for linkage between the ECLS-B and the ECLS-K cohorts, a relatively heavy representation of items were chosen from ECLS-K.

There are both similarities and differences in the approaches of these two studies. The similarities allow for a comparison of linked data between the two datasets while the differences provide for complementary data. The complementarity of the two datasets is perhaps among the most important and innovative use of kindergarten and birth cohorts, because it can facilitate the analysis of research questions spanning the two cohorts. Analysts from a variety of disciplines can broaden the scope of their research interests in attempting to answer key policy-relevant questions by using estimates of a given set of factors from one dataset that are extrapolated from the other dataset. For these reasons, it is important to look not just at the degree of overlap in measures and items, but also at how different items or measures from one dataset can fit within a broader research question by using related but dissimilar items or measures from the other dataset.

Since many of the items are common across other national studies, the ECLS-B data will provide important benchmark, population-based estimates that can be compared across studies. This information can be used to construct new indicators, and provide new mechanisms for public health research and program and policy evaluation. That is, the comparability of items across time and across the two studies allow questions to be asked that build upon the data collection efforts of other agencies. For example, the measures of infant development planned for ECLS-B were chosen because they are expected to predict later intellectual growth using the cognitive and language measures from ECLS-K, but they can also be used to develop estimates of cognitive development across time that can be compared to a comprehensive set of information on early health care, health care utilization, and medical intervention

that will be collected in ECLS-B. Thus, early maternal and child health can be used to make predictions to later cognitive development through the early school years, by linking estimates from the two studies and then extrapolating these estimates to the later school years in which ECLS-K is collecting data.

ECLS-B focuses on a host of factors within the child, parent-child relationship, family, and community that influence growth and children's first experiences with as they enter school for the first time. These factors include: child temperament, maternal and child health status and health care utilization, family and household structure, parent-child relationships, family economic self-sufficiency, alternate caregiving environments including later experiences in formal early childhood education programs. ECLS-K examines how these factors influence children's academic achievement and experiences through the fifth grade. Table A-2 summarizes the link between constructs measured in ECLS-B during the first two waves and those that are being used in ECLS-K (for older children).

Another critically important use of the ECLS-B is derived from the prospective, longitudinal design. Longitudinal data have several advantages over cross-sectional data for researchers who are seeking to understand the links between children's life circumstances and their development, health and achievement. Longitudinal data are important when investigating such issues as:

- Measuring early events, conditions, and developmental accomplishments or difficulties with greater validity and accuracy than is possible through recall and retrospective report;
- Determining the causal order in relationships between pairs of variables. This is done by examining whether the correlation between variable a measured at time 1 and variable b measured at time 2 is stronger or weaker than the correlation between variable b measured at time 1 and variable a measured at time 2.
- Understanding the factors associated with a family or child moving into a given situation or circumstance, such as becoming poor or using center-based child care;
- Controlling for selection bias in examining the relationship between specific environmental circumstances (e.g., Participation in a preschool program) and later health or achievement;
- Determining the duration and intensity of certain statuses, such as poverty or residential status and moves, by sampling the family at several points in time;

Table A-2. Comparison of constructs assessed in ECLS-B (first two waves, through 18 months) and ECLS-K

Constructs	*ECLS-B*	*ECLS-K*	*Comments*
Developmental Milestones			ECLS-B examines child's motor development and ECLS-K examines motor coordination. ECLS-B evaluates child's interpersonal relationship and ECLS-K evaluates preschooler social skills and prosocial behavior.
• Gross motor development	✓	✓	
• Fine motor development	✓	✓	
• Socialization	✓	✓	
Communication and Language			Child's use of gestures, an indicator of prelinguistic ability, is developmentally appropriate in ECLS-B but inappropriate in ECLS-K..
• Receptive language	✓	✓	
• Expressive language	✓	✓	
• Gestures	✓		
Temperament			Although one-to-one mapping of items in ECLS-B and ECLS-K is not possible, ECLS-B does investigate the developmentally more basic aspects of temperament which are the basis for the developmentally more complex temperament, activity level, persistence questions included in ECLS-K
• Emotion Regulation	✓	✓	
• Distress to novel stimuli	✓	✓	
• Distress to limitations	✓	✓	
• Negativity/difficulty	✓	✓	
Behavior Problems			A subset of question are asked in ECLS-K that are analogous to ECLS-B on both constructs
• Internalizing Behavior	✓	✓	
• Externalizing Behavior	✓	✓	
Attachment			No direct assessment of child attachment behaviors in ECLS-K. However, a vast literature suggests that this construct is a critical underpinning for child's growth and development. Would expect that attachment status of infants would predict to preschooler adjustment to changes such as transition to kindergarten.
• Separation and Reunion Behavior	✓		
Mother-Baby Teaching			No direct assessment of mother-child interaction in ECLS-K. However questions are asked in ECLS-K about the cognitive stimulation of child's homelife.
• Response to child's distress	✓		
• Cognitive growth fostering	✓	✓	
Approach to Learning			Developmentally more complex items are included in ECLS-K that are analogous to ECLS-B (e.g., fearfulness, task persistence, social engagement).
• Orientation engagement	✓	✓	
Physical Growth			
• Physical health status	✓	✓	
• Anthropometric measures of growth			In ECLS-B, the anthropometric measures include middle upper-arm circumference and head circumference.
Pregnancy & Early Child Health Practices			
• Prenatal information	✓		
• Medical risk factors/health problems during pregnancy	✓		
• Multiple birth	✓	✓	
• Timing of delivery	✓	✓	
• Delivery method and complications	✓	✓	
• Birth weight	✓	✓	
• Food and nutrition	✓		ECLS-B items on food and nutrition are being sponsored by the USDA.

Table A-2. Comparison of constructs assessed in ECLS-B (first two waves, through 18 months) and ECLS-K (continued)

Constructs	*ECLS-B*	*ECLS-K*	*Comments*
Mother's Background			
• Date of birth / age	✓	✓	
• Country of origin	✓		
• Ancestry	✓		
• Language	✓	✓	
• Educational attainment	✓	✓	
• Employment status	✓	✓	
• Family composition growing up	✓		
• Receipt of public assistance growing up	✓		
• Religious background	✓	✓	
• School experiences		✓	
• Educational attainment of parents			
Resident Father's Information			
• How long lived in household	✓	✓	
• How often father cares for child	✓		
• Current employment status	✓	✓	ECLS-K items on activities ask about those done by any family member.
• Activities done with child	✓	✓	
Household Composition/Family Structure			
• Background information for all household members	✓	✓	Questions asking about length of time living with household members and the status and background of nonresident biological mothers was not proposed for ECLS-B given the very young age of children at the first data collection point.
• Changes in composition & reasons	✓		
• Other mother/father figures		✓	
• Time child has lived with each household member;		✓	
• Background of nonresident biological mother		✓	
		✓	
Marriage and Partner Relationships			
• Marital history	✓	✓	
• Quality of current marriage or partner relationship	✓		
Mother's Childbearing History			
• Age at first birth	✓	✓	
• Number and dates of previous births	✓		
• Additional pregnancies and outcomes	✓		
Expectations for Child Development			
• General knowledge of child development	✓		
• Educational aspirations for child	✓	✓	
Home Educational Activities & Environment			Items proposed for ECLS-B 9-month parent interview focus on reading environment set by parents, rather than reading to or by the child. Items on reading & activities with child will be incorporated in follow-up interviews.
• Reading and home activities	✓	✓	
• Toys and other materials	✓	✓	
• Home safety	✓		

Table A-2. Comparison of constructs assessed in ECLS-B (first two waves, through 18 months) and ECLS-K (continued)

Constructs	*ECLS-B*	*ECLS-K*	*Comments*
Parenting Behavior and Attitudes			
• Valued child behaviors and characteristics	✓	✓	Some ECLS-K items on school readiness skills are comparable to those proposed for valued child behaviors.
• Warmth & physical affection	✓		
• Parenting practices	✓		
Nonresident Biological Father Information			ECLS-K also asks about nonresident biological mothers; this was not proposed for ECLS-B, given the very young age of children at the first data collection point; the absence of biological mothers will be very rare.
• Background information & employment status	✓	✓	
• Frequency of contact	✓	✓	
• Child support	✓		
Child Care Arrangements			ECLS-K contains retrospective questions on arrangements child had during year before starting K and on participation in Head Start—not applicable for ECLS-B sample. Items on costs of arrangements are included in both the ECLS-K and ECLS-B.
• Child care arrangement status	✓	✓	
• Types of current arrangements	✓	✓	
• Characteristics of arrangement (most hours)	✓	✓	
• Parent perceptions of quality of care	✓		
Parent Involvement in School			Some items proposed for ECLS-B are comparable to ECLS-K items measuring parent attitudes on school readiness (i.e., ECLS-B items on age-appropriate behaviors for infants or general knowledge of child development, and ratings of important child characteristics).
• Information sent from school to home		✓	
• School choice		✓	
• Delayed kindergarten entry		✓	
• Adjustment to school		✓	
• Importance of school readiness skills	✓	✓	
• Educational aspirations for child	✓	✓	
Child health			
• Health status	✓	✓	
• Medical care and hospitalizations	✓		
• Disabilities and receipt of services	✓	✓	
• Food and nutrition	✓	✓	ECLS-K and ECLS-B items on food and nutrition are being sponsored by the USDA.
Family Health			
• Sibling disabilities	✓		
• Mother's health	✓		
• Household food sufficiency	✓		
Stressful Circumstances for Family Life			ECLS-K asks only about financial problems; items on stresses proposed for ECLS-B are more extensive.
• Recent occurrence of stressful life events	✓	✓	
• Extended separations from child	✓		
Neighborhood Quality / Safety			
• Housing quality	✓		
• Resident stability	✓		
• Victimization	✓		
• Satisfaction with neighborhood	✓		

Table A-2. Comparison of constructs assessed in ECLS-B (first two waves, through 18 months) and ECLS-K (continued)

Constructs	*ECLS-B*	*ECLS-K*	*Comments*
Social Support			
• Emotional support	✓		ECLS-K asks if child has close relationship with grandparents; proposed ECLS-B questions ask about the relationship the child's parent has with (grand)parents.
• Financial support	✓		
• Support in cases of emergency	✓		
• Advice for parenting	✓		
• Closeness to parents	✓	✓	
Community Support			
• Involvement with friends or community groups	✓		
• Need for and receipt of services	✓		
• Neighborhood resources	✓		
Family Routines			
• Eating and sleeping routines	✓		
• Division of household and child care tasks	✓		
Mother's Education & Employment			
• Current participation in education or training	✓	✓	
• Characteristics of current employment	✓	✓	
• Employment history 12 months before delivery	✓		
• Attitudes about employment	✓		
Welfare & Other Public Transfers			
• Receipt and duration of public assistance	✓	✓	
Household Income			
• Number of adults who contribute	✓		
• Total household income	✓		

- Enabling researchers to study factors associated with gains in achievement or changes in child health, not just levels of achievement or health; and,
- Permitting researchers to study the possible moderating effects of services or interventions that come between early traumatic events (e.g., Birth at a very low birth weight) and later school entry.

Examples of the application of longitudinal data in ECLS-B include investigations of the longer-term effects of maternal behavior during pregnancy, low birth weight, access to adequate child health care, and family disruption. By adding important, population-based information on the link between early life circumstances and later achievement, it will allow the National Education Goals Panel to validate their current Goal One indicators or construct better social indicators based on birth certificate, census, and health survey data and other periodically obtained information about families with young children.

NCES will use the ECLS-B data to prepare and publish descriptive reports on various topics covered in the survey, as mentioned earlier, and will be able to conduct sophisticated analyses of factors predicting school readiness. The publication plans for the ECLS-B are described in section A.15.

Data will also be made available to the National Education Goals Panel for use in their "Report Card on the Nation." Data from previous studies conducted by NCES have been used in this way by the Goals Panel in their annual reports, for example, data from the National Household Educational Surveys (NHES). Further, the Goal One Technical Planning Group of the National Education Goals Panel defined school readiness along key developmental domains, including physical well-being/health, social and emotional development, language acquisition and emerging literacy, and cognitive development. This definition has guided the design of the measures in the ECLS-B, so that the data arising from this study will be of immediate policy relevance and significance to the focus of the Goals Panel.

The data from ECLS-B will also be made available for public use following the removal of all identifying information, such as telephone numbers and names. Data files will be prepared in accordance with NCES standards for protecting the confidentiality of survey participants and placed on a CD-ROM disk with a menu-driven, electronic codebook.

A.3 Use of Improved Information Technology

The ECLS-B requires the use of birth records for sample selection and analytic purposes. The National Center for Health Statistics (NCHS) plans to obtain permission from the state registrars to participate in the study, and to obtain birth records from the states for the purposes of ECLS-B. NCES and Westat are working closely with NCHS on these procedures.

The ECLS-B parent interviews will be conducted using a computer-assisted personal interviewing (CAPI) system. The telephone interviews with nonresident fathers at 9-months and with child care providers at 18-months will use a computer-assisted telephone interviewing (CATI) system. Both the CAPI and CATI system have important features that will improve the quality of the data and reduce the burden on respondents, as follows:

- **Recruitment and Consent:** The CAPI/CATI system will guide the Westat field representative in making contact with the parent at the address provided, and to confirm receipt of the letter, to answer any questions the parent may have about the study, to identify the primary caregiver (usually the mother) and – if the parent agrees – to arrange to conduct the primary caregiver interview and the direct assessment of the child. When first arriving at the respondent's home, CAPI will also prompt the interviewer to hand an "at the door sheet" to the respondent, and to cover the main points orally, thereby ensuring fully informed consent.

- **Skip Patterns:** The CAPI/CATI systems automatically guide interviewers through the complex skip patterns in the parent interviews, reducing the potential for interviewer error and shortening the questionnaire administration time. This will be especially important when interviewing parents of twins, where a good deal of questions must be repeated for the second child. Finally, while the hard copy of the questionnaires may appear large, the bulk of respondents will skip many of the more detailed sections and thus respondent burden and interviewing time will be reduced.

- **Copying Responses:** The CAPI/CATI systems will be programmed to copy responses from one instrument to another to prevent unnecessary repetition of questions and to aid in respondents' recall. For example, information from the parent interview at the home visit can be copied to the nonresident father telephone interview in order to follow-up some of the information and verify such aspects as the father's occupation and/or education level. In another example, information from the same interview that is provided by the respondent earlier in the interview may be useful later in the interview (i.e. the identification of the resident father or father-figure, or the names of the child's siblings) and these can be displayed on the screen at the relevant section to assist the respondent. Finally, and most importantly, information from the first wave of data collection can be copied to the second wave and verified at that second interview.

- **Time Intervals:** The CAPI/CATI system also provides automated time and date prompts that are very useful in longitudinal studies to assist respondents in remembering specific time periods, such as the trimesters of their pregnancy, the child's first six months of life, periods between one event and another, etc. In the second wave, the interview can also provide the specific time frame for the interval between the first and second waves of data collection, to help respondents recollect information without repeating what they had given at the first data collection period.

- **Receipt Control:** The CAPI/CATI system will provide for automatic receipt control in a flexible manner that will be used to produce status reports that allow ongoing monitoring of the survey's progress.

The use of CAPI/CATI systems for ECLS-B is critical because of the difficult skip patterns that are created with complex survey instruments, and because of the longitudinal nature of the data collection in which the same respondent is interviewed over repeated time periods. Each subsequent data collection point will be able to make use of information obtained at an earlier data collection, thereby reducing respondent burden and interview time. Without CATI/CAPI, these would be difficult instruments to administer over repeated measurement periods, and respondent burden would be increased.

Westat also uses computer-based data management systems for managing the sample. The sample management system uses data transmission and networking technology to maintain timely information on respondents in the sample, including contact, tracking and case completion data. This will be especially important in the telephone interviews with child care providers because, according to experts in the field, the first contact with the provider must occur within approximately 48 hours of obtaining the information from parent, in order to ensure a high response rate. With regard to nonresident fathers, it is likely that the initial information obtained from the mothers will not be complete or timely, and additional tracing efforts will be required. The use of sample management technology will maximize the contact and tracking efforts and hence the response rates.

A.4 Efforts to Identify Duplication

The ECLS-B was designed to supplement data already collected by the Kindergarten cohort, by producing "downward age" population estimates for a cohort of children starting at 9-months of age (compared with estimates in the Kindergarten cohort which begin at 5 years of age). Thus, it is specifically designed not to duplicate the Kindergarten cohort but rather to add to our understanding of early indicators and predictors of school readiness, achievement and child development outcomes. The advantage of this approach, as discussed earlier in the "Purposes and Uses of the Data" section (Section

A.2.), is that estimates from one dataset, such as ECLS-B, can be compared with those from the ECLS-K at later time periods, and statistical linking can be done in order to extrapolate relationships from one study to the other study. This would be especially useful when determining the long-term effects of early care and experiences on school achievement outcomes *beyond* first grade and through the sixth grade (where only ECLS-K is designed to provide data).

Further, NCES has consulted with a wide variety of federal agencies throughout the design of the Early Childhood Longitudinal Study, using regular interagency meetings for this purpose. Representatives from these agencies recognize that no other studies, past or current, collect similar breadth and depth of information. These consultations, working group meetings, and information exchanges have produced more concrete contributions in terms of money or in-kind services to the design of the ECLS-B. That is, because the ECLS-B will be a unique resource on early childhood health and development, many other agencies have committed funds to participate in the project. Their participation in ECLS-B will avoid duplication and maximize the value of the data across federal agencies. Duplication is avoided because ECLS-B is the product of these sponsoring agencies, which have contributed to this study rather than "reinvent the wheel" by launching their own national longitudinal initiatives. Table A-3 summarizes the agencies that have been involved and the areas of interest and expertise that they bring to the ECLS-B.

While the primary sponsor of ECLS-B is the National Center for Education Statistics (NCES) of the U.S. Department of Education (ED), a number of education and health policy agencies have contributed to the funding, staff support, and questionnaire design content. The agencies from the U.S. Department of Health and Human Services (HHS) include the National Center for Health Statistics (NCHS); the National Institute for Child Health and Human Development (NICHD), and other components of the National Institutes for Health (NIH); the Head Start Bureau of the Agency for Children, Youth, and Families (ACYF) and the Maternal and Child Health Bureau of the Health Resources and Services Administration (HRSA). The Economic Research Service (ERS) of the U.S. Department of Agriculture (USDA) and the Office of Special Education Programs (OSEP) of the Department of Education are also participating as sponsors for the study.

Table A-3. Federal Agency Interests in ECLS-B.

Federal Agency	Areas of Agency Interest
NCHS	Child Health Insurance; Child's pediatric care utilization; Content of prenatal care visits; Household structure; Father's involvement in child development; Methods of infant feeding; Maternal work status at time of contraception & Delivery; Developmental progress of children born preterm or at low birth weight in terms of cognitive, social-emotional, & motor skill development; Disabilities and health limitations, Health & developmental status of multiples; Exposures & health habits of the mother during pregnancy.
NIH, NICHD	Nonresident fathers; role of fathers in children's development; parenting; child care
NIH, NICHD	Health content supplement, general survey content, sample supplementation, twin and very low birthweight (VLBW) over-samples, fatherhood supplement, minority subgroups.
Ed, OSEP	Early intervention program knowledge and participation, disability screening, linking with the National Early Intervention Longitudinal Study (NEILS)
USDA, ERS	Length and weight measurement, feeding practices, hunger program participation, food sufficiency
HHS ACYF	Low-income families and children; participation of low-income families in nonparental care arrangements; knowledge/awareness of Head Start programs; factors predicting utilization of Head Start/ Early Head Start; measurement of quality in child care and preschool settings; assessment of children's early cognitive, social and language development; language minority families
MCH	Pregnancy and birth outcomes; child and family access and utilization of health services; twins
NCHS/NSFG	Resident and nonresident fathers; intendedness/wantedness of pregnancy; income and employment factors related to child development outcomes
ASPE	Nonresident fathers; participation in welfare and other income assistance programs; transitions in caregiving arrangements; community level social indicators; language minorities

NCHS is playing a critical role in the design and selection of the ECLS-B sample, with NCHS drawing the actual sample of births and providing birth certificate information, including address and contact information. NCHS also is providing technical design support of the collection of extensive health data. NICHD funds are being used to support survey content, oversampling of twins and very low birth weight infants, and the self-administered questionnaire for resident fathers. NICHD also submitted a proposal for NIH 1 percent Evaluation Funds to support ECLS-B as a means for other institutes to participate in the ECLS-B. A portion of this proposal has been approved for Fiscal Year 1999. ACYF intends to supplement the study's ability to support studies of Head Start enrollees and eligibles who are not enrolled; a design effort for this activity is underway as part of a separate contract. The USDA has contributed questionnaire items to capture information about participation in Federal food programs (e.g.,

the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and the Child and Adult Care Food Program (CACFP)), infant feeding practices, food insufficiency and hunger, and periodic measures of ECLS-B sample children's height and weight. Maternal and Child Health Bureau (MCHB) has participated in interagency meetings and have contributed to decisions regarding the scope and appropriateness of measures that meet their interests, including the above USDA-sponsored items. OSEP has contributed items on children with disabilities and awareness of children with disabilities.

A.5 Suitability of Existing Data

There is currently no study within the United States that follows a national sample of children from birth through the early formative years, and to school. Few existing data bases permit the study of children's early learning experiences, their transition into school and their early school experience by race-ethnicity, gender, region, etc. Most research on children's early development and education has been conducted on small, often nonrepresentative samples of specific groups of children (e.g., disadvantaged inner city black children). There are some notable exceptions, but most of these do not use national samples and a single-cohort design beginning from early infancy and spanning the infant, toddler and preschool years. The table in Appendix H summarizes the key, existing large-scale longitudinal studies.

The National Institute for Child Health and Human Development is sponsoring the Study of Early Child Care, a longitudinal study of 1,200 infants sampled from hospitals in 10 heterogeneous sites across the country. Children were visited and observed in their homes at 1, 6, 15, and 36 months and in child care settings at 6, 15, 24, and 36 months. The study also includes observations of the children and their mothers in a laboratory setting at 15, 24, and 36 months. However, the sample size is small and not necessarily nationally representative as compared to the ECLS-B.

The National Center for Health Statistics conducted the National Maternal and Infant Health Survey (NMIHS). The NMIHS was designed a follow-back survey for a national sample of 11,000 mothers with live births in 1988. The children were between 2 and 3 years old at the time of the follow-back data collection. The study collected a wide range of data on children's health and development, child care, child safety, maternal health, maternal depression, medical care, accidents, hospitalizations, etc. Unlike the ECLS-B, the NMIHS was not designed to be a prospective longitudinal survey and there are currently no plans to followup the 1988 cohort of births again, in part because of the relatively low

initial response rate (74%), and the length of time that as elapsed making successful re-contact particularly difficult. Instead of investing in its own birth study, NCHS is investing substantial staff resources to collaborate with NCES on the ECLS-B.

The Bureau of Labor Statistics sponsors the National Longitudinal Survey of Youth (NLSY) and the National Longitudinal Survey of Youth – Child Supplement. Interviews were conducted regarding the children born to female participants in the NLSY who were 14-21 years of age in 1979. Individual child assessments were administered in the child's home and assessments of the child's home environment were obtained through questionnaire and observational methods. This study has been extremely useful for policy analyses, but the data are somewhat limited because it was not representative of all children in the country, and it does not specifically address the special issues in the early development of very young children.

The Child Development Supplement to the Panel Study of Income Dynamics (PSID-CDS) began in 1997 with a national sample of 3,500 children from birth through 12 years of age. There was an initial in-home interview of family members, along with telephone interviews in later data collections, the administration of a child achievement test (the Woodcock-Johnson Tests of Achievement) and self-administered questionnaires were completed by the child's teacher and school or child care provider. However, the sample was primarily cross-sectional and there were insufficient numbers within each age group to constitute separate cohorts. Further, the major purpose of the study focused on human capital formation but without the breadth of topics addressed in the ECLS-B.

The Early Head Start Child Care Study sponsored by the Administration on Children, Youth, and Families is studying more than 3,000 children and families in 17 communities in 15 states. Child and family assessments are being administered at 14, 24, and 36 months. Observations of child care settings and interviews with child care providers occur at the same three points in time. The sample consisted only of low-income families who are eligible for Head Start services and thus the study results cannot provide population-based estimates. Additionally, the study was carried out in many different sites by different teams of local investigators, with core data being pooled for the national-level analyses.

Another study approached children's transition from school from a different perspective. The National Transition Study sponsored by the U.S. Department of Education used a national sample of public schools to examine activities initiated by schools and preschool programs to ease children's transition between programs from the school/program point of view. No data were collected on or from

the children who experience these transitions, and the study was not able to examine the impact of these transition activities on child outcomes. However, it does provide useful and important information about how schools view this critical transition and the programs they offer children and their families.

The Project on Human Development in Chicago Neighborhoods (PHDCN) consists of two studies: a community survey and a longitudinal cohort study. In the community survey, Chicago was divided into 343 neighborhood clusters using 1990 Census data, and 9,260 interviews were conducted with one person 18 years of age or older in each of the chosen households within each neighborhood cluster. In the longitudinal cohort study, 7,000 children from birth to 18 years of age and their families were selected from 80 representative neighborhood clusters. There were 1,000 children in each of seven age-based cohorts (0-1, 3, 6, 9, 12, 15, and 18 year olds in 1996). The longitudinal study will cover an 8-year period from 1995 to 2003 using an "accelerated longitudinal design" in which different cohorts will be followed over the 8 years. Computer-assisted in-person interviews are conducted annually and the data primarily focus on community, neighborhood, family, peers, schools and individual characteristics of the sample.

Several of these large scale studies of children can be used as comparison groups for ECLS-B (and vice-versa). The National Longitudinal Survey of Youth (NLSY79) and the Children of the NLSY79 includes questions on topics such as schooling, employment history, household composition, child care, and income, topics similarly included in the ECLS-B parent instruments. The NLSY79 Child Supplement includes a battery of cognitive, socio-emotional, and physiological assessments of children of the NLSY79 female respondents, as well as an assessment of the quality of children's home environments. Many of the questions are the same as or similar to questions included in ECLS-B. The NLSY79 Child Supplement could also provide comparisons for assessment methodology for ECLS-B.

There are also a variety of international initiatives that can provide useful comparative data to that collected by ECLS-B, but which cannot replace the lack of national data in the United States. The Canadian National Longitudinal Survey of Children (NLSC) study is similar to NLSY79; it follows children ranging in age from newborn to 11 years. Like ECLS-B, this study covers a broad range of characteristics that affect children's growth and development. The fifth followup of the National Child Development Study (NCDS5) is a British study that provides an international comparison group for the NLSY79 and has a child supplement that was modeled on the NLSY79 Child Supplement, using the same assessments. Both NLSC and NCDS5 could be used for cross-cultural comparisons with the ECLS-B and ECLS-K cohort.

A.6 Collection of Data from Small Businesses

Not applicable

A.7 Consequences of Less Frequent Data Collection

This request is for clearance of the first phase of ECLS-B, covering the two-wave field test and the first two waves of the national data collection, at the 9- and 18-month. As mentioned earlier, the strengths of the study include the measurement of key developmental and health outcomes and changes in parent, family, and community factors across multiple time periods, for the same cohort of children who are all "starting" at the same point, that is, when they are 9-months of age. Repeated measures across time will provide data for sophisticated analytic techniques such as multilevel modeling, growth curve analyses, and structural equation modeling to study factors at different ecological levels within and across time periods. Multiple measurement periods can capture not only changes over time, but also the rates of growth. Many of the events that affect children's academic performance occur before a child ever sets foot in a classroom, and children's intellectual growth occurs at a faster rate during the preschool years than during the school years. The proposed design for data collection across the entire period of the study weighs the benefits of multiple data collection periods with the respondent burden imposed and the effects on response rates.

The specific design of the "outyears," that is, the data collection past the first phase of the study (9- and 18-month data collection points) includes a design featuring in-person data collection every 12 to 18 months. In-person data collections involving both parent interviews and direct child will occur at 18-months, 30 months, 48 months, kindergarten, and first grade. This plan provides for a total of 6 data collection points with data collection points not occurring across consistent intervals of time. The interval between the 30-month and 48-month data collection points is 18 months, whereas the intervals between all other measurement periods is only 12 months. Therefore, the inclusion of a longer interval of time in the design is an effective compromise weighing the demands of cost and respondent burden while retaining as many in-person data collections as possible.

A.8 Consistency With 5 CFR 1230.6

This data collection is consistent with 5 CFR 1320.6.

A.9 Consultations Outside the Agency

As mentioned earlier in Section A.4, during the early development of ECLS-B, both prior to and following contract award, NCES staff met regularly with representatives from a wide range of federal agencies with an interest in the care and well-being of children and families. Interagency meetings were held approximately every two months to update representatives from these federal agencies on the design plans for the ECLS-B and to solicit their input into decisions regarding sample, instrument development and timing of the data collections. These meetings continue to be held as the ECLS-B sample and instrument designs have been more fully realized, and representatives from a variety of federal agencies have made a significant contribution to the study. The interagency group is comprised of representatives from the different agencies sponsoring the ECLS-B, including NCES, NCHS, National Institute for Child Health and Human Development (NICHD), Head Start Bureau of the Agency for Children, Youth, and Families (ACYF), and the Economic Research Service (ERS) of the U.S. Department of Agriculture (USDA). A list of the interagency participants is provided below.

Interagency Group Participants

Name	Affiliation
Linda Adams	Child Care Bureau
Chris Bachrach	NICHD
Janet Baldwin	ESSI
Scott Brown	OSEP
Mary Bruce Webb	ACYF
Natasha Cabrera	NICHD
Mary Cassell	OMB
Dan Chenok	OMB
Leslie Christovitch	Agriculture - FNS
Phoebe Cottingham	Children & Families at Risk
Libby Doggett	ED - Office of the Director
Brad Edwards	Westat
John Endahl	Agriculture - FNS
Jeffrey Evans	NICHD
Lisa Fairhall	OMB
Jennifer Friedman	OMD - HS Coor.
Sarah Friedman	NICHD
Jim Griffin	ED/ OERI
Doug Herbert	Endowment of the Arts
Glinda Hill	OSEP
Kimberly Hoagwood	NIMH
Howard Hoffman	NIDCD
Marita Hopmann	ACYF/Head Start
Howerton	ACYF
Naomi Karp	ED - OERI
Ken Keppel	NCHS
Woody Kessell	Maternal and Child Health Bureau
Michael Kogan	NCHS
Esther Kresh	ACYF
Cara Krulewitch	NINR
Edwin Lau	OMB
Milagros Lanuaze	OBEMLA
Rose Li	OMB
Don Lollar	CDC
Michael Lopez	ACYF
Matthew McHearn	OMB
Marian McDorman	NCHS
Linda Mellgren	HHS - ASPE
Katherine Moore	OMB
Martha Moorhouse	HHS - ASPE
Gilda Morelli	ACYF - Early Head Start
Leslie Mustain	OMB
Vick Oliveira	Economic Research Service
Bob Pokras	NCHS
Delia Pompa	OBEMLA
Helen Raikes	ACYF
Tracy Rimdzius	ED - Even Start
Louisa Tarullo	ACYF
Danny Werfel	OMB
Jeff Wilde	Agriculture - FNS
Stella Yu	Maternal and Child Health Bureau

In addition, National Institutes of Health (NIH) established a working group to provide feedback to NCES to help prioritize the health conditions and health issues to be included in the ECLS-B questionnaires and to provide input on the survey content as a whole. The NIH working group includes staff members from NICHD; the National Eye Institute (NEI); the National Heart, Lung, and Blood Institute (NHLBI); the National Institute on Aging (NIA); the National Institute on Alcohol Abuse and Alcoholism (NIAAA); the National Institute on Deafness and Other Communication Disorders (NIDCD); the National Institute on Drug Abuse (NIDA); the National Institute of Mental Health (NIMH); the National Institute of Nursing Research (NINR); and the Office of Behavioral and Social Sciences Research (OBSSR). A list of the NIH working group participants is provided below.

NIH Working Group

NICHD	Christine A. Bachrach, Ph.D., Chief Demographic and Behavioral Sciences Branch, Center for Population Research
	Marie Bristol, Ph.D., Health Scientist Administrator Mental Retardation and Developmental Disabilities, Center for Research on Mothers and Children
	Natasha Cabrera, Ph.D., Expert Science and Ecology of Early Development (SEED)
	Jeffrey Evans, Ph.D., J.D. Health Scientist Administrator Demographic and Behavioral Sciences Branch, Center for Population Research and Facilitator, NICHD Family & Child Well-Being Research Network
	Sarah Friedman, Ph.D., Director Cognitive, Social, and Affective Development, Child Development and Behavior Program, CHDB, CRMC and Scientific Coordinator and co-Principal Investigator, NICHD Study of Early Child Care
	Rose Maria Li, M.B.A., Ph.D., Health Scientist Administrator and Demographer Demographic and Behavioral Sciences Branch, Center for Population Research
	Reid Lyon, Ph.D., Chief Child Development and Behavior Branch (CHDB), Center for Research on Mothers and Children (CRMC)
	Mary Overpeck, Ph.D., Epidemiologist Division of Epidemiology, Statistics, and Prevention Research
	Lou Quatrano, Ph.D., Director Behavioral Science and Rehabilitation Engineering Program, National Center for Medical Rehabilitation Research
	Mona Rowe, M.C.P., Deputy Director Office of Science Policy, Analysis and Communication
	Anne Willoughby, Ph.D., Chief Pediatric, Adolescent and Maternal AIDS Branch, Center for Research on Mothers and Children
NEI	Carmen Moten, Ph.D., Chief Policy, Legislation, Planning, and Evaluation Branch, OSPL
NHLBI	Michele Hindi-Alexander, Ph.D., Health Scientist Administrator Airway Biology and Disease Program, Division of Lung Diseases and Coordinator of NHLBI Interest in the ECLS-B

NIA	Richard Suzman, Ph.D., Chief Demography and Population Epidemiology, Behavioral and Social Research Program and Director, Office of Demography
NIDCD	Howard Hoffman, Ph.D., Chief Epidemiology, Statistics and Data Systems, Office of the Director
NIDA	Leslie Cooper, Ph.D., Nurse Epidemiologist Epidemiology and Research Branch
	Elizabeth Robertson, Ph.D., Team Leader Prevention Research Branch
NIMH	Kimberly Hoagwood, Ph.D., Associate Director for Child and Adolescent Research Division of Services and Intervention Research and Division of Mental Disorders, Behavioral Research and AIDS
	Peter Jensen, M.D., Chief Development Psychopathology Research Branch
	Editha Nottelmann, Ph.D., Chief Depression and Anxiety Program, Development Psychopathology Research Branch
OBSSR	Virginia Cain, Ph.D. Special Assistant to the Director

Organizations Sponsoring the ECLS-B. Several of the government consultations have resulted in interagency agreements, or in some case, agreements in principle that are likely to occur within the next few months. These organizations and the agency representatives are listed below.

NCHS is playing a critical role in the design and selection of the ECLS-B sample, with NCHS drawing the actual sample of births and providing birth certificate information, including address and contact information. NCHS also is providing technical design support of the collection of extensive health data. NICHD funds are being used to support survey content, oversampling of twins and very low birth weight infants, and the self-administered questionnaire for resident fathers. NICHD also submitted a proposal for NIH 1 percent Evaluation Funds to support ECLS-B as a means for other institutes to participate in the ECLS-B. A portion of this proposal has been approved for Fiscal Year 1999. ACYF intends to supplement the study's ability to support studies of Head Start enrollees and eligibles who are not enrolled; a design effort for this activity is underway as part of a separate contract. The USDA has contributed questionnaire items to capture information about participation in Federal food programs (e.g.,

the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and the Child and Adult Care Food Program (CACFP)), infant feeding practices, food insufficiency and hunger, and periodic measures of ECLS-B sample children's height and weight. OSEP has contributed items on children with disabilities and awareness of children with disabilities.

Sponsoring Federal Agency Representatives

Rose Li
Natasha Cabrera
Demographic and Behavioral Sciences Branch
Center for Population Research, NICHD
6100 Executive Boulevard, Room 8B13
Rockville, MD 20852
(301) 435-6982

Michael Kogan
National Center for Health Statistics (NCHS)
Center for Disease Control and Prevention
President Building
6525 Belcrest Road
Hyattsville, MD 20782

Marita Hopmann
Mike Lopez
Louisa Tarullo
DHHS/ACYF
330 C. Street, SW
Switzer Building
Room 2119
Washington, DC 20447
Hopmann: (202) 205-8398
Lopez: (202) 205-8212
Tarullo: (202) 205-8324

Victor Oliviera
John Endahl
Economic Research Service
USDA
Room 2056, South Tower
1800 M Street, NW
Washington, DC 20036-5831
(202) 694-5434

Glinda Hill
OSEP
330 C. Street, SW
Switzer Building
Room 3521
Washington, DC 20202-2641
(202) 205-9145

Stella Yu
DSEA/MCHB/HRSA
5600 Fishers Lane
Room 18-A55
Rockville, MD 20852
(301) 443-0695

Linda Mellgren
Martha Morehouse
DHHS/OS/ASPE
Humphrey Building, Rm 404E
200 Independence Ave., SW
Washington, DC 20201
(202) 690-6806

Technical Review Panels. Westat assembled a technical review panel (TRP) to provide review and comment on the study design and to evaluate issues related to the development of the assessment and survey instruments. In the past year, two TRP meetings were held and it is anticipated that there will be at least two meetings per year for the duration of the study. The ECLS-B Technical Review Panel convened in Washington, DC on July 16-17, 1998 and on Dec. 2-3, 1998. The July meeting focused on: how best to reduce the instrument length; the optimal time for initiating data collection, and staging of the subsequent data collection points; addressing cultural diversity, especially with regard to Hispanic subgroups; collecting data from nonresident fathers; and the potential for videotaping parent-child interaction. The December meeting dealt with: bringing closure to the instrument design and draft instruments; discussing and reaching decisions regarding the out-year measurement; and refining the study longitudinal perspective in the data collection and analysis plans.

ECLS-B Technical Review Panel Members

List of ECLS-B TRP Members

Name	Affiliation	Area of expertise
Martha Abbott-Shim	Georgia State University Center for the Study of Adult Literacy University Plaza Atlanta, GA 30303-3083 (44) 651-0399	Quality of child care
Emily Arcia	Mailman Center for Child Development 5333 Collins Avenue #1401 Miami Beach, FL 33140 (305) 867-1894	Latino family issues, ADHD
Kathryn Barnard	University of Washington School of Nursing, Room 212 South Bldg, CHDD Box 357920 Seattle, WA 98195-7920 (206) 543-9200	Early parent-infant relationships and effects on development

Name	Affiliation	Area of expertise
Susan Bredekamp	National Association for the Education of Young Children 1834 Connecticut Ave. Washington, DC 20009 (202) 328-2601	School readiness, policy issues
Thomas Jordan	University of Missouri-St. Louis University of Missouri at St. Louis 8001 Natural Bridge Road St. Louis, MO 63121-4499 (314) 516-5732	Longitudinal studies of children
Milt Kotelchuck	University of North Carolina 1314 Brigham Road Chapel Hill, NC 27514 (919) 966-2010	Pediatrics and Child Health Policy
Kristin Moore	Child Trends 4301 Connecticut Avenue Suite 100 Washington, DC 20008 (202) 362-5580	Father involvement
Suzanne Randolph	University of Maryland Dept of Family 1204 Marie Mount Hall College Park, MD 20742 301-405-4012	Child development among African-American families, parent-child interaction
Aline Sayer	Pennsylvania State University Dept. of Human Development & Family Studies S-159 Henderson Building University Park, PA 16802-6504 (814) 865-7091	Multilevel modeling, growth curve analysis
Jacquelyn Thompson	Michigan Department of Education Office of Special Education & Early Intervention Services P.O. Box 30008 Lansing, MI 48911 (517) 373-9433	Special education, policy and programs

In addition to the TRP members, Westat consulted with the following substantive experts throughout the study design:

Name	Affiliation	Area of Expertise
Cameron Chumlea	School of Medicine Ohio State University 1005 Xenia Avenue Yellow Springs, OH 45387-1695 (937) 767-6928	Anthropometry, especially anthropometric and body composition methodologies
David Dickerson	Educational Development Corporation 55 Chapel St Newton, MA 02158-1060 (617) 618-2454	Language and early literacy development
Cynthia Garcia Coll	Dept. of Education Brown University Box 1938 Providence, RI 02912 (401) 863-3147	Language development, Hispanic children, and language minority issues
Martha Hill	Institute for Social Research P.O. Box 1248 Ann Arbor, MI 48106-1248 (734) 763-2358	Economics including labor market conditions, parental employment, receipt of cash and non cash benefits, and family time-use patterns,
Sandra Hofferth	Institute for Social Research 426 Thompson Street Ann Arbor, MI 48109 (734) 763-5131	Family processes, social policy research, and child care
Carollee Howes	Graduate School of Education University of California in Los Angeles 1029C Moore Hall Box 951521 Los Angeles, CA 90024-1521 (310) 825-8336	Measurement of child care quality, and assessment of early social development and peer play

Name	Affiliation	Area of Expertise
Jerome Kagan	Department of Psychology Harvard University William James Hall 33 Kirkland Street Room 1346 Cambridge, MA 02138-2044 (617) 495-3870	Children's cognitive, social, and emotional development during infancy and early childhood, and the effects of differences in temperament dispositions
Jill Korbin	Department of Anthropology Case-Western Reserve University 11220 Bellflower Rd 238 Mather Memorial Cleveland, OH 44106-7125 (216) 368-2278	Cross-cultural research and social policy research
John Love	Mathematica Policy Research Corporate P.O. Box 2393 Princeton, NJ 08543 (609) 275-2245	Development psychology, social policy, methodology, and child care
Samuel Meisels	School of Education University of Michigan 610 East University Room 3210 Ann Arbor, MI 48109-1259 (734) 763-7306	Education, methodology, and high risk infancy
Robert Pianta	Curry School of Education University of Virginia 147 Ruffner Hall 405 Emmet Street Charlottesville, VA 22903 (804) 243-5483	Early child development, school readiness, and learning disabilities
Donald Rock	Educational Testing Service 666 Rosedale Road Mailstop 15T Princeton, NJ 08541 (609) 734-5655	Psychometrics
Carol Sepkoski	College of Arts & Science University of Massachusetts 100 Morrissey Boulevard Boston, MA 02125-3393 (617) 287-6390	BSID-II administration and child assessment using BSID-II

Name	Affiliation	Area of Expertise
Catherine Snow	Graduate School of Education Harvard University 313 Larsen Hall Cambridge, MA 02138 (617) 495-3563	Language environments and early language development, and the role children's language skills play in school readiness
Brian Vaughn	Dept. of Family and Child Development Auburn University 203 Spidle Hall Auburn University, AL 36849-5604 (334) 844-3235	Attachment research, social and personality development during infancy and childhood, and development of social competence
Kathleen Williams	American Guidance Services 1845 Indiana Avenue SE Huron, SD 57350 (605) 352-9493	Test development, research design, analysis, and item analysis

A.10 Payments to Respondents

Payment to respondents is primarily to defray the time and expense required by their participation in the study, rather than to improve the response rate. However, maintaining high response rates is an important factor in the success of this study, given the repeated data collection periods and lengthy in-home data collection procedures. There is convincing experimental research that an incentive can raise response rates and reduce the effort required to attain a given response rate, by much more than the cash value of the incentive itself. For example, Kanuk and Berenson (1975) found that only two procedures had any empirical effect on response rates: the use of monetary incentive and followup contact.

Westat has participated in research on the effectiveness of payments to respondents and we have encouraged OMB's involvement in this process of evaluating the effects of incentives on response rates, performance and survey costs. A report on the field test for the 1992 National Adult Literacy Survey (NALS) that included an experiment to test the effects of incentives was delivered to OMB. The results showed significant increases in response rates for respondents who received an incentive, with some reduction in survey costs, and that the impact of incentives was greatest for those populations frequently underrepresented in national household surveys -- individuals with low educational attainment

and minority groups. Recently, a monetary incentive experiment, conducted by the Research Triangle Institute during the pretest for Cycle V of the National Survey of Family Growth (NSFG), found strong evidence for using a $20 incentive for in-person home-based interviews. Finally, NCES strongly supports the use of incentives, particularly for longitudinal and lengthy personal interview methods of data collection (NCES, 1992).

A longitudinal study such as the ECLS-B requires repeated participation of the respondent, and success requires some real level of commitment to the total project. To gain full cooperation in ECLS-B, the parents of the sampled children must be convinced that the study has important and worthwhile goals and that the data about their children will make a significant contribution to the success of the study. Again, incentives are useful because the size of the incentive helps respondents to judge the survey's importance (Berry and Kanouse, 1987).

It is recognized that some expenses to families may be incurred during study participation and that each 90 minute home visit represents a significant amount of time and disruption to normal routines. Therefore, parents will be reimbursed $20 per data collection period to defray expenses at the time of each interview. In addition, a small gift such as a book appropriate for the age of a child at the time of the home visit will be given to parents at each interview point. The approximate value of this gift is $5 per data collection.

Resident fathers will be mailed a reimbursement of $15 after they have completed and returned the self-administered questionnaire. For the field test only, nonresident fathers will also be interviewed. It is well-known from other studies that this is a difficult group to recruit because of their varied and often poor connection with the target family and because they live in different households. As part of the field study, we are assessing the response rates to nonresident fathers using a combination of telephone or in-person CAPI/CATI interview. Approximately half of the nonresident fathers will be given a significantly briefer interview than the others (10 minutes vs. 20 minutes) in order to test the effects of interview length on their response rates. Since we do not want differences in incentives to affect the test of interview length, we will reimburse all nonresident fathers, to defray their expenses, the same amount. All nonresident fathers will be mailed a reimbursement of $20. We feel the difference between this amount and that given to resident fathers ($15) is justifiable because the nonresident fathers are living in different households, and they are participating in an interview, as opposed to a self-administered questionnaire.

For families where the child is in an alternate child care arrangement at 18-months of age, the parent will be offered an additional $5 to contact their provider, prior to Westat contacting them, to encourage the provider to participate in the telephone interview. This is currently being used successfully in several studies (San Francisco and in the Fragile Families study) and, according to our consultants and discussions with these researchers, an added incentive to parents appears to be an important element securing the cooperation of the child care provider in a timely manner. As mentioned previously, it is vital that contact with the child care provider be made within 48 hours following the home visit to secure knowledge of their whereabouts and to increase their participation in the study. Child care providers will be mailed $20 for their expenses in participating in the 30-minute telephone interview.

For the ECLS-B field test, several incentive experiments are planned to help determine whether the approach planned for the national study is more cost effective and produces higher response rates than several variations. The first experiment in the field test will allow us to examine the effect of a cash incentive compared to cash and a small gift for the child. We plan to randomly assign the parents to one of two equal-sized groups. Group A will be offered $20 for completion of the 9-month parent interview; Group B will be offered $15 and a gook (with a value less than $10) as a gift for the child.

For the resident father questionnaire in the field test, we plan to vary the point at which the $15 is presented. Half of the resident fathers will be randomly assigned to treatment A, in which the interviewer will attach the money to a blank questionnaire and the cover letter. The other half will be assigned to treatment B, in which the cover letter offers them the incentive upon completion of the questionnaire.

For the child care provider questionnaire in the field test, we plan to ask the parent interview respondent to make a preliminary contact with the child care provider, telling them that the child is part of the ECLS-B and that the parent has given permission for a telephone interviewer to contact the child care provider for information. Half of the parents with children in child care will be offered $5 for helping with this contact; the other half will not be offered any cash for helping.

A.11 Assurance of Confidentiality

All information identifying the individual respondents will be kept confidential, in compliance with the legislation (P.L. 100-297), which states that:

(4)(A) "Except as provided in this section, no person may --

(i) use any individually identifiable information furnished under the provisions of this section for any purpose other than statistical purposes for which it is supplied;

(ii) make any publication whereby the data furnished by any particular person under this section can be identified; or

(iii) permit anyone other than the individuals authorized by the Commissioner to examine the individual reports ..."

All Westat staff members working on the ECLS-B project or having access to the data (including monitoring of interviews and assessments) are required to sign the NCES Affidavit of Nondisclosure (Exhibit A-1) and a similar Westat confidentiality pledge (Exhibit A-2). Notarized affidavits are kept on file at Westat and documentation is submitted to NCES quarterly.

The names and addresses of the children and parents selected for the study will be collected from the birth records. These data will be retained in locating files at Westat through the end of the Westat contract (December 31, 2003), in order to contact parents for the initial wave of the study, and to keep in touch with them in subsequent waves of data collection. The intention is to retain these data in identifiable form as long as there is any possibility of subsequent contacts with the study sample. Currently, the study design extends for 10 years, until December 31, 2008. When the identifying data from birth records are no longer needed, they will be destroyed, by purging electronic files and shredding paper records.

Other identifying information obtained during the course of the survey (such as addresses of relatives and other contacts, addresses the child and parent moved to, questionnaire data that could identify the child or parent) will be treated confidentially as an absolute obligation. Every public data set will be carefully reviewed to ensure that the data do not pose a risk that an individual could, even potentially, be identified.

A data security plan was delivered to NCES on April 30, 1998, detailing our plans for safeguarding confidentiality. It meets the data security requirements stated in the "Restricted-Use Data Procedures Manual" (February, 1996). The plan addresses personnel security, physical security, computer system security, and communications security. We have established an employee security awareness and training program; we maintain lists of persons and their authorization privileges; all authorized staff are required to sign an affidavit of nondisclosure.

Exhibit A-1. NCES Affidavit of Nondisclosure

AFFIDAVIT OF NONDISCLOSURE

(Job Title) _____ (Date of Assignment to NCES Project) _____

(Organizations, State or local agency or instrumentality) _____ (NCES Database or File Containing Individually Identifiable Information) _____

(Address) _____

I, _____, do solemnly swear (or affirm) that when given access to the subject NCES database or file, I will not

(i) use or reveal any individually identifiable information furnished, acquired, retrieved or assembled by me or others, under the provisions of Section 406 of the General Education Provisions Act (20 U.S.C. 1221e-1) for any purpose other than statistical purposes specified in the NCES survey, project or contract;

(ii) make any disclosure or publication whereby a sample unit or survey respondent could be identified or the date furnished by or related to any particular person under this section can be identified; or

(iii) permit anyone other than the individuals authorized by the Commissioner of the National Center for Education Statistics to examine the individual reports.

_____
(Signature)

(The penalty for unlawful disclosure is a fine of not more than $250,000 (under 18 U.S.C. 3559 and 3571) or imprisonment for not more than 5 years, or both. The word "swear" should be stricken out wherever it appears when a person elects to affirm the affidavit rather than to swear to it.)

State of Maryland

County of _____

Sworn and subscribed to me before a Notary Public in and for the aforementioned County and State this _____ day of _____ 1999.

_____
(Notary Public)

Exhibit A-2. Westat Confidentiality Pledge

WESTAT

EMPLOYEE OR CONTRACTOR'S ASSURANCE OF CONFIDENTIALITY OF SURVEY DATA

Statement of Policy

Westat is firmly committed to the principle that the confidentiality of individual data obtained through Westat surveys must be protected. This principle holds whether or not any specific guarantee of confidentiality was given at time of interview (or self-response), or whether or not there are specific contractual obligations to the client. When guarantees have been given or contractual obligations regarding confidentiality have been entered into, they may impose additional requirements which are to be adhered to strictly.

Procedures for Maintaining Confidentiality

1. All Westat employees and field workers shall sign this assurance of confidentiality. This assurance may be superseded by another assurance for a particular project.

2. Field workers shall keep completely confidential the names of respondents, all information or opinions collected in the course of interviews, and any information about respondents learned incidentally during field work. Field workers shall exercise reasonable caution to prevent access by others to survey data in their possession.

3. Unless specifically instructed otherwise for a particular project, an employee or field worker, upon encountering a respondent or information pertaining to a respondent that s/he knows personally, shall immediately terminate the activity and contact her/his supervisor for instructions.

4. Survey data containing personal identifiers in Westat offices shall be kept in a locked container or a locked room when not being used each working day in routine survey activities. Reasonable caution shall be exercised in limiting access to survey data to only those persons who are working on the specific project and who have been instructed in the applicable confidentiality requirements for that project.

   Where survey data have been determined to be particularly sensitive by the Corporate Officer in charge of the project or the President of Westat, such survey data shall be kept in locked containers or in a locked room except when actually being used and attended by a staff member who has signed this pledge.

5. Ordinarily, serial numbers shall be assigned to respondents prior to creating a machine-processible record and identifiers such as name, address, and Social Security number shall not, ordinarily, be a part of the machine record. When identifiers are part of the machine data record, Westat's Manager of Data Processing shall be responsible for determining adequate confidentiality measures in consultation with the project director. When a separate file is set up containing identifiers or linkage information which could be used to identify data records, this separate file shall be kept locked up when not actually being used each day in routine survey activities.

6. When records with identifiers are to be transmitted to another party, such as for keypunching or key taping, the other party shall be informed of these procedures and shall sign an Assurance of Confidentiality form.

7. Each project director shall be responsible for ensuring that all personnel and contractors involved in handling survey data on a project are instructed in these procedures throughout the period of survey performance. When there are specific contractual obligations to the client regarding confidentiality, the project director shall develop additional procedures to comply with these obligations and shall instruct field staff, clerical staff, consultants, and any other persons who work on the project in these additional procedures. At the end of the period of survey performance, the project director shall arrange for proper storage or disposition of survey data including any particular contractual requirements for storage or disposition. When required to turn over survey data to our clients, we must provide proper safeguards to ensure confidentiality up to the time of delivery.

8 Project directors shall ensure that survey practices adhere to the provisions of the U.S. Privacy Act of 1974 with regard to surveys of individuals for the Federal Government. Project directors must ensure that procedures are established in each survey to inform each respondent of the authority for the survey, the purpose and use of the survey, the voluntary nature of the survey (where applicable) and the effects on the respondents, if any, of not responding.

PLEDGE

I hereby certify that I have carefully read and will cooperate fully with the above procedures. I will keep completely confidential all information arising from surveys concerning individual respondents to which I gain access. I will not discuss, disclose, disseminate, or provide access to survey data and identifiers except as authorized by Westat. In addition, I will comply with any additional procedures established by Westat for a particular contract. I will devote my best efforts to ensure that there is compliance with the required procedures by personnel whom I supervise. I understand that violation of this pledge is sufficient grounds for disciplinary action, including dismissal. I also understand that violation of the privacy rights of individuals through such unauthorized discussion, disclosure, dissemination, or access may make me subject to criminal or civil penalties. I give my personal pledge that I shall abide by this assurance of confidentiality.

Signature

Data will be housed within secure Westat facilities in Rockville. Access to facilities that process sensitive data is controlled. User and master modes of computer operations are separated. Controls will be installed to prevent unauthorized access to systems. The secrecy of passwords and log-on codes is protected. Only secure data transmission procedures will be used. The transmission of collected data will be separated from the executable survey instruments.

Direct identifiers such as names and telephone numbers will be excluded from the public data sets. Proximate identifiers will also be excluded from the public data sets. Examples are string text items, which sometimes contain potential identifiers such as child care program names or respondent zip codes. We will also review all data sets before delivery to determine whether any other items may present a disclosure risk.

A.12 Sensitive Questions

The ECLS-B is a voluntary study and no persons are required to respond to the questionnaires and to participate in the assessments. In addition, respondents may decline to answer any question in the survey. This voluntary aspect of the survey is clearly stated in the advance letter mailed to parents, the study brochure, the "at the door" sheet, and the introduction, and it is stressed in interviewer training.

Revised draft survey instruments are included in the Appendices to this package for OMB review. These instruments have undergone extensive review and revision by Westat's design staff, a team of approximately 20 consultants with expertise in a variety of areas, by a technical review panel representing a variety of disciplines, and by all the participating federal agencies. Although most of the survey items could not be construed as sensitive, the primary caregiver's questionnaire at 9 and 18 months does include items on substance abuse, child wantedness, marital happiness and conflict, problematic child behavior, food sufficiency, mother's weight before pregnancy, relationship with the father, use of birth control, program participation and income, mental health and family history of mental illness, stress, and nonresident father's financial support. It also includes the Woodcock Johnson Scale of word recognition.

A self administered form will be used in the 9-month parent interview to collect the most sensitive data items. The self administered form will be handed to the respondent for completion near the

end of the interview and will serve to reduce any interviewer or social desirability effect. The self-administered form will make the data collection experience more private and the data less susceptible to inception by a spouse or partner. The interviewer will invite the respondent to place the completed form in an envelope and seal it. We plan to include items D1 to D4, G16, G17, and P12 to P15 on the self-administered form.

The father's questionnaire includes items on child support, substance abuse, wantedness, marital happiness and conflict, income, mental health, stress, and family history of mental illness.

The child care provider's questionnaire includes items on income, training and licensing, which may be sensitive for providers who are not center based and who are not licensed.

A.13 Estimated Response Burden

The response burden per instrument and the total response burden for the ECLS-B 9- and 18-month data collections are shown in Table A-4. The estimated times for interviews are based on practice interviews conducted by project staff with purposively selected individuals during the design of the instruments and on the times required to administer interviews and assessments to respondents in cognitive research activities. Following the field test, more precise timings of interviews and assessments will be available.

Table A-4. Estimated response burden for the ECLS-B Phase 1

Data Collection Form	Estimated time (mins)	Number of Interviews	Total Time (hrs)
Field Test (9-months)			
Parent Interview	70	1,200	1,400
Child Assessment	20	1,200	400
Resident Father SAQ	20	500	167
Nonresident Father Interview[1]	20	210	70
Field Test (18-months)			
Parent Interview	70	1,080	1,260
Child Assessment	25	1,080	450
Child Care Provider Interview	30	370	185
Field Test Total		**5,640**	**3,932**
9-Month Data Collection			
Parent Interview	70	12,140	14,163
Child Assessment	20	12,140	4,047
Resident Father SAQ	20	6,382	2,127
9-Month Data Collection Total		**30,662**	**20,337**
18-Month Data Collection			
Parent Interview	70	11,300	13,183
Child Assessment	25	11,300	4,708
Child Care Provider Interview	30	6,000[2]	3,000
18-Month Data Collection Total		**28,600**	**20,891**
Phase 1 National Data Collection Total		59,262	41,228

[1] In the field test we will be assessing two versions of the instrument for nonresident fathers, to identify the impact of the length of the interview on response rates. The "long" form of the interview will average approximately 25 minutes while the "short" form of the interview will average 10 minutes. The present request does not include a nonresident father interview component in the Phase 1 full-scale study. The field test results and the availability of federal agency support will determine its implementation in the full-scale data collection and, if this were to occur, a separate request will be submitted.

[2] Assumes that 45% of the completed home visited cases will have child care arrangements, and that the response rate for the child care provider interviews is 80%.

A.14 Annualized Cost to Respondents

The cost to respondents for the total hour burden, based on a rate of $10 per hour, is estimated to be $39,733 for the entire field test (both 9- and 18-month data collections), $208,800 for the 9-month full-scale data collection, and $402,767 for the 18-month full-scale data collection. On a per year basis, the overall cost to respondents for all study components occurring in each year is listed in Table A-5.

Table A-5. Per year costs to respondents

Year	Study Component	Respondent Cost
1999	9-Month Field Test	$20,783
2000	18-Month Field Test	$18,950
	9-Month Data Collection (1/3)	$68,904
2001	9-Month Data Collection (2/3)	$139,896
	18-Month Data Collection (2/3)	$129,958
2002	18-Month Data Collection (1/3)	$64,009

There are no other costs to respondents and there are no recordkeeping requirements associated with the ECLS-B.

A.15 Annualized Cost to the Federal Government

The total cost of Phase 1 ECLS-B to the government is approximately $16,020,000 over a period of five years, from 1998 through 2002. This cost includes all direct and indirect costs of the design, data collection, analysis, the reporting phases of the study, and the production of public and proprietary data sets. On a per year basis, the overall cost to respondents for all study components occurring in each year is listed in Table A-6.

Table A-6. Per year costs to the Federal Government

Year	Study Component	Cost
1998	Instrument and Sample Design	$ 820,000
1999	9-Month Field Test	$1,600,000
2000	18-Month Field Test 9-Month Data Collection Data Analyses and Reports	$3,000,000
2001	9-Month Data Collection 18-Month Data Collection Data Analyses and Reports	$5,600,000
2002	18-Month Data Collection Data Analyses and Reports Public Use Dataset Production	$5,000,000
	Total Cost	$16,020,000

A.16 Reasons for Program Changes

The ECLS-B is a new data collection providing benchmark national estimates that will be linked to the ECLS-K, so that NCES can describe and analyze child health and development outcomes, and the factors that affect these outcomes, spanning the ages from birth through grade 5. ECLS-B will also provide important comparative data for items related to a number of additional federal survey efforts from a variety of government agencies.

A.17 Publication Plans and Project Schedule

Publication Plans

In addition to the delivery of the data to NCES, Westat will produce a public release file, with codebooks and user manuals, as well as a number of brief statistical reports summarizing key aspects of the data. These plans are likely to be supplemented by additional data analyses and statistical reports but they are not planned to occur until much later in the project.

Restricted and Public Use Files. Westat plans to deliver to NCES two preliminary data files -- one file intended for public use and one file containing potentially confidential data that is for use only by the Government. We will make this delivery on CD-ROM, in ASCII, SAS/PC, and SPSS/PC formats. Each file will include an electronic codebook (ECB) and an introductory ("Readme") file that explains the guidelines for accessing all the information on the CD-ROM. Westat will place instructions to type or read the introductory file on the outside of each CD-ROM, and to include a liner page that explains how to print or type the introductory file.

Each of the two files will be accompanied by an Electronic Code Book (ECB) developed by Westat. The Westat ECB allows users to browse through the different data files, creating lists of variables for further analysis. These variables may either be examined as codebook items (including full variable descriptions with weighted and unweighted frequencies) or may be used to subset other variables. The ECB software also writes out SAS and SPSS code to read in the data files, should the user want to conduct further analyses using either statistical package. The ECB will be delivered with a user's guide that provides details on the contents of the CD-ROM, hardware/software needs and considerations, ECB features, installation procedures, and step-by-step descriptions of how to use the ECB.

The data file user's manual will include: an introduction to the purpose and scope of ECLS-B, as well as how ECLS-B fits in the overall picture of NCES/ED data collection efforts; a description of the ECLS-B design and programmed questionnaires; information about sampling, weighting, and imputation; a discussion of the data collection effort; a review of the data preparation activities, including coding and editing, and the systems that supported that work; a guide to the layout of the data file and to the layout of the codebook; and an explanation of any anomalies or pitfalls that users may encounter while using the data. In addition, Westat will deliver, either as part of the data file user's manual or as a separate user's guide, a document that suggests techniques for working with the data files, helps users avoid common mistakes, and provides answers to frequently asked questions.

Westat understands the legal and ethical need to preserve the confidentiality of the ECLS-B survey data, and we have extensive experience in developing public use data files that meet the Government's requirements to maintain individual confidentiality. We have experience on the National Household Education Survey and other surveys meeting the standards set forth in "Statistical Standards for Maintaining Confidentiality." A variety of masking strategies will ensure that individuals may not be identified from the public data files. These strategies, include: omitting key variables such as name, address, telephone number, Social Security number, state or ZIP code from the public use file, collapsing

categories or developing categories for continuous variables, to retain information for analytic purposes while preserving confidentiality, and "topcoding" continuous variables[3].

The confidential, restricted use file will be a superset of the public use file. That is, the restricted use file should contain all variables, including both forms of variables that have been changed for confidentiality reasons. This approach ensures that NCES/ED has access to the confidential data for its own research purposes, but is also able to reproduce results reported by the public use community.

Statistical Reports. Westat will produce at least two Statistics in Brief (SiB) publications using the ECLS-B data. The reports are intended for a wide audience that may include policymakers, researchers, educational professionals, and members of the general public. Typically, the SiBs produced by Westat for NHES addressed one or more specific questions related to a major research question. Some criteria for topic selection would be topics that are of substantial interest and importance to the education and child welfare communities; topics that the ECLS-B is uniquely suited to address and other available data sets are not; and topics that do not require complex analytic techniques. Westat and NCES/ED will jointly author each report and each report will include tables highlighting the key statistical findings. The number of tables will be dictated by the report topics, with one to three tables typically included in a SiB. Possible topics for SiBs in which there would probably be widespread interest, both in the child policy community and in the public at large, include: "Risk Factors At Birth and Their Relationship To Children's Early Development," and "Substitute Child Care Arrangements During the First Year of Life: Frequency and Measures of Quality."

Information about pre- and perinatal risk factors is available from the birth certificate and could be examined for their predictiveness of subsequent developmental outcomes, such as children's intellectual functioning, temperament, social competence. Maternal risk factors that are available from the birth certificate include the mother's age, the number of her previous pregnancies and live births, number of prenatal care visits, the presence of medical complications during pregnancy or delivery as well as such behavioral risk factors as tobacco or alcohol intake and excessive weight gain. Information that may indicate risk factors that become evident at birth include the child's Apgar score, the child's birth weight and the presence of abnormal medical conditions or congenital anomalies, such as Down Syndrome or spina bifida. Another possible SiB could address the issue of babies' early experiences with

[3] Topcoding refers to the process of recoding outlier values to some acceptable end value. For instance, everyone with a personal income above $100,000 may be recoded to $100,000 to eliminate the outliers.

substitute child care. Various researchers have argued that alternate child care that begins early in a baby's life (i.e., under a year) may have a negative impact on children's later capacity for forming a strong emotional bond with the parent as well as for children's later interactions with peers. As well, the issue of alternate child care is of particular interest to policy researchers because recent changes due to welfare reform will force mothers to enter the labor force and require children to enter day care at earlier ages. Therefore, one SiB could address the issue of "Substitute Child Care Arrangements During the First Year of Life: Frequency and Measures of Quality."

Standard errors will be reported in a technical appendix of the report. For ease of interpretation, standard errors of the estimates could also be presented in the same tables as the estimates. Bivariate analysis is recommended for those publications that are intended for a wide audience. If appropriate, multivariate techniques will be used to make the patterns in the data unambiguous for the reader. Usually, estimates will be compared using a student's *t* statistic with a Bonferroni adjustment for multiple comparisons. The *t* values will be embedded in the text in parentheses for the convenience of reviewers, and the first draft of each report will be accompanied by spreadsheets showing the statistical tests and the critical *t* value for the family size of the specific comparisons made. Where appropriate, a Rao-Scott chi-square statistic may be reported instead of the Bonferroni *t* statistic.

Before submission of the first drafts to NCES, the draft reports will be reviewed by a senior member of the project team other than the author(s) and then edited by one of Westat's editors. These reviews will ensure not only that the data are presented accurately and clearly, but also that formats and numbers are consistent within and between other extant NCES/ED publications, the text flows logically and clearly, any ambiguous terms are defined, and that all materials meet the standards mandated by NCES Statistical Standards and the OERI publications guide.

Project Schedule

The schedule for ECLS-B is demanding. Table A-7 details the critical project milestones and deliverable dates. The schedule outlines the various work plans and tasks for major deliverables, such as instruments, reports, and manuals.

Table A-7. ECLS-B: Schedule of core task deliverables and milestones Revised 11/30/98
Contract start date: 1/1/98

SCHEDULE FOR BASE-YEAR (9-MONTH DATA COLLECTION POINT) AND BEYOND, EXCEPT WHERE NOTED

Schedule for Base-year (9-month data collection point) and Beyond, Except Where Noted

Task	Contract Language	Calendar Date
Project Planning and General Management (Task 1)		
Project Initiation Meeting	Within 2 weeks of contract start date	1/15/98
■ Produce agenda	5 working days before meeting	1/9/98
Other meetings with NCES/ED	3 meetings per year	
■ Agenda	5 working days before meeting	
Briefing materials	Within 2 weeks of a request	
■ Resubmission of revised materials	Within 1 week of receipt of comments	
Project brochures		
■ Draft of 1st brochure	Within 12 weeks of contract award	4/1/98
■ Draft of 2nd brochure	12 weeks before baseline data collection	3/1/00
■ Resubmission of camera-ready, color separated copies of brochures	2 weeks following receipt of comments	
Project bibliography		
■ 1st draft	52 weeks following contract award	1/1/99
■ Revised bibliography	Within 2 weeks of receipt of comments	1/15/99
■ Update bibliography	Annually	
Confidentiality procedures		
■ Signed affidavits of nondisclosure		
- Main project staff	Within 2 weeks of contract award	1/15/98
- New staff assigned to project	1st working day of assignment to ECLS-B	
- Interviewers, other short-term employees	Schedule designated by COTR or at a minimum 3 times a year	
■ Detailed security plan	8 weeks after contract award	3/1/98
Data Quality Plan		
■ Plan for evaluating data quality	Within 36 weeks of contract award	11/6/98
■ Resubmission of plan	Within 2 weeks of receipt of comments	

Technical Review Panel (Task 2)		
■ Identify members	Within 2 weeks of contract start date	1/15/98
■ Solicit nominated individuals for membership	Within 6 weeks of contract start date	2/15/98
■ Meetings		
- Schedule	36 weeks in advance	
- Agenda	1 month in advance	
- Agenda and other materials to panel members	1 week prior to meeting	
- Hold meetings	Twice a year	
■ Written summary of meetings	Within 2 weeks of each meeting	
■ Distribution of meeting minutes	Within 3 weeks of each meeting, after NCES review	
■ Inform TRP of progress of study	Semiannually	
Develop Survey Instruments and Procedures (Task 3)		
■ Summary of meetings with education policy offices and groups	Within 8 weeks of contract award	2/27/98
■ Draft content outline	24 weeks after contract award	6/15/98
- Summary of comments from TRP members	30 weeks after contract award	7/31/98
■ Draft copies of study instruments	40 weeks following contract award	10/8/98
- Resubmission of instruments	Within 1 week of receipt of comments	
■ Cognitive laboratory research		
- Memorandum outlining cognitive laboratory research plan	24 weeks after contract award	6/26/98[4]
- Draft cognitive research report	Within 2 weeks of completing cognitive research	10/8/98
- Resubmission of report	1 week after receipt of comments	
■ Assessment plan		
- Submit draft	Within 32 weeks of contract award	10/23/98[1]
- Resubmission of plan	1 week after receipt of comments	
Sample Design (Task 4)		
■ Sample design plan		
- 1st draft	Within 36 weeks of contract award	10/6/98
- Resubmission of plan	1 week after receipt of comments	
Study Design Report (Task 5)		
■ Outline	20 weeks after contract award	5/15/98
■ 1st draft	48 weeks after contract award	12/1/98
- Revised draft	Within 1 week of receipt of comments	

[4] Modification to contract schedule.

Final Draft Package of IMT/OMB Clearance (Task 6)			
		180 working days before the start of the base-year field test data collection	1/15/99[1]
Develop CATI/CAPI System (Task 7)			
■	CATI/CAPI edit specifications	6 weeks prior to the start of base-year data collection (9/1/00)	7/15/00
	- Resubmission of specifications	2 weeks after receipt of comments	
■	Availability of CATI/CAPI instruments to NCES/ED COTR	2 weeks prior to base-year field test (9/8/99)	8/25/99
■	Copies of English- and Spanish-language versions of CATI/CAPI screens	6 weeks prior to the base-year field test (9/8/99)	7/28/99
	- Revised screens	1 week after receipt of comments	
Field Test of Survey Instruments and Procedures (Task 8)			
■	Description of plans for conducting field test	36 weeks after contract award	12/1/98[1]
■	Summary of field test	3 weeks after completing base-year field test data collection (1/31/00)	2/21/00
■	Submit design/instrument changes in memo	3 weeks after completing base-year field test data collection (1/31/00)	2/21/00
	- Resubmission of memo	Within 1 week of receipt of comments	
Hiring and Training CATI/CAPI Interviewers (Task 9)			
■	Outline of interviewer training program	12 weeks prior to the start of base-year data collection (9/1/00)	6/1/00
■	Training materials	5 weeks prior to the start of the 1st (base-year) interviewer training session (8/20/00)	7/14/00
	- Revised materials	5 working days prior to distribution to base-year interviewer trainees (8/13/00)	8/8/00
■	Train interviewers	At least 1 week prior to the start of base-year data collection (9/1/00)	8/21/00
Data Collection (Task 10)			
■	Progress reports	Weekly during base-year data collection period (9/1/00-9/30/01)	
Data File Preparation and Documentation (Task 11)			
■	Plan for post-CATI/CAPI editing	No later than the start of base-year data collection (9/1/00)	9/1/00
	- Revised plan	1 week after receipt of comments	

[1] Modification to contract schedule.

■ Specifications for the coding of open-ended items	No later than the start of base-year data collection (9/1/00)	9/1/00
- Revised specifications	1 week after receipt of comments	
■ Status report of data editing and corrective actions	4 weeks after the end of base-year data collection (9/30/01)	10/28/01
■ Plan describing proposed structure and specifications of data files	No later than the start of base-year data collection (9/1/00)	9/1/00
- Revised plan	2 weeks after receipt of comments	
■ Plan for the creation of composite and classification variables	No later than the start of base-year data collection (9/1/00)	9/1/00
- Revised plan	Within 1 week of receipt of comments	
■ Documentation of procedures planned for use in developing weights	No later than the start of base-year data collection (9/1/00)	9/1/00
- Resubmission of planned procedures	1 week after receipt of comments	
■ Draft copies of computer-related products	No later than 12 weeks after the end of base-year data collection (9/30/01)	12/24/01
- All preliminary files, documentation needed to access and read data, and user's manual	Within 16 weeks of the end of base-year data collection (9/30/01)	1/21/02
- Revised copies of data files and user's manuals	2 weeks after receipt of comments	
Data Analysis and Reporting (Task 12)		
■ Proposal for *Statistics in Brief* reports	8 weeks before the end of base-year data collection (9/30/01)	8/1/01
- Revised proposal	Within 1 week of receipt of comments	
■ 1st draft of first-release report	20 weeks after the end of base-year data collection (9/30/01)	2/15/02
■ Plan for computing standard errors	No later than the start of base-year data collection (9/1/00)	9/1/00
- Revised plan	Within 1 week of receipt of comments	
Methodology Report (Task 13)		
■ 1st draft of report	No later than 24 weeks after the end of base-year data collection (9/30/01)	3/15/01
- Revised report	Within 2 weeks of receipt of comments	

Schedule for First Followup (18 - month data collection point)

Task	Contract Language	Calendar Date
Develop CATI/CAPI System (Task 7)		
■ CATI/CAPI edit specifications	6 weeks prior to the start of first followup data collection (6/1/01)	4/16/01
- Resubmission of specifications	2 weeks after receipt of comments	
■ Availability of CATI/CAPI instruments to NCES/ED COTR	2 weeks prior to first followup field test (6/3/00)	5/15/00
■ Copies of English- and Spanish-language versions of CATI/CAPI screens	6 weeks prior to first followup field test (6/3/00)	4/16/00
- Revised screens	1 week after receipt of comments	
Field Test of Survey Instruments and Procedures (Task 8)		
■ Summary of field test	3 weeks after completing first followup field test data collection (9/3/00)	9/24/00
■ Submit design/instrument changes in memo	3 weeks after completing first followup field test data collection (9/3/00)	9/24/00
- Resubmission of memo	Within 1 week of receipt of comments	
Hiring and Training CATI/CAPI Interviewers (Task 9)		
■ Outline of interviewer training program	12 weeks prior to the start of first followup data collection (6/1/01)	3/1/01
■ Training materials	5 weeks prior to the start of the first followup interviewer training session (5/20/01)	4/16/01
- Revised materials	5 working days prior to distribution to first followup interviewer trainees (5/14/01)	5/8/01
■ Train interviewers	At least 1 week prior to the start of first followup data collection (6/1/01)	5/20/01
Data Collection (Task 10)		
■ Progress reports	Weekly during first followup data collection period (6/1/01-6/30/02)	

Data File Preparation and Documentation (Task 11)		
■ Plan for post-CATI/CAPI editing	No later than the start of first followup data collection (6/1/01)	6/1/01
- Revised plan	1 week after receipt of comments	
■ Specifications for the coding of open-ended items	No later than the start of first followup data collection (6/1/01)	6/1/01
- Revised specifications	1 week after receipt of comments	
■ Status report of data editing and corrective actions	4 weeks after the end of first followup data collection (6/30/02)	7/31/02
■ Plan describing proposed structure and specifications of data files	No later than the start of first followup data collection (6/1/01)	6/1/01
- Revised plan	2 weeks after receipt of comments	
■ Plan for the creation of composite and classification variables	No later than the start of first followup data collection (6/1/01)	6/1/01
- Revised plan	Within 1 week of receipt of comments	
■ Documentation of procedures planned for use in developing weights	No later than the start of first followup data collection (6/1/01)	6/1/01
- Resubmission of planned procedures	1 week after receipt of comments	
■ Draft copies of computer-related products	No later than 12 weeks after the end of first followup data collection (6/30/02)	10/1/02
- All preliminary files, documentation needed to access and read data, and user's manual	Within 16 weeks of the end of first followup data collection (6/30/02)	11/1/02
- Revised copies of data files and user's manuals	2 weeks after receipt of comments	
Data Analysis and Reporting (Task 12)		
■ Proposal for *Statistics in Brief* reports	8 weeks before the end of first followup data collection (6/30/02)	5/1/02
- Revised proposal	Within 1 week of receipt of comments	
■ 1st draft of first-release report	20 weeks after the end of first followup data collection (6/30/02)	11/15/02
■ Plan for computing standard errors	No later than the start of first followup data collection (6/1/01)	6/1/01
- Revised plan	Within 1 week of receipt of comments	
Methodology Report (Task 13)		
■ 1st draft of report	No later than 24 weeks after the end of first followup data collection (6/30/02)	12/15/02
- Revised report	Within 2 weeks of receipt of comments	

A.18 Approval for Not Displaying the Expiration Date for OMB Approval

Not applicable as we are not seeking this approval.

Part B

Part B: Justification

PART B: DESCRIPTION OF STATISTICAL METHODOLOGY

B.1 Statistical Design and Estimation

B.1.1 Introduction

The Early Childhood Longitudinal Study, Birth Cohort 2000 (ECLS-B) objectives require a nationally representative panel survey of children born in the year 2000. These children will be sampled from registered births in the vital records systems maintained by the National Center for Health Statistics (NCHS). The registered births will be sampled within a set of primary sampling units (PSUs) in order to control travel costs in the fielding of the survey. This design will allow for maximum, efficient coverage of the target population and is preferable to other approaches that would involve large screening efforts and/or coverage errors. A total of 15,205 births will be sampled, to yield 12,141 completes in Wave 1. After allowance for nonresponse and infant mortality, this sample size will be large enough to achieve the analytic precision required for the survey estimates both overall and for specific subgroups of children.

B.1.1.1 Analytic Objectives

The ECLS-B analytic objectives cover a variety of areas, including research on child growth curves, risk factors at birth and their relationship to child development, and the availability and quality of infant and toddler care. ECLS-B will provide data for modeling child growth curves and identifying the significant parameters for these growth curves. ECLS-B will measure the appropriate dependent and independent variables through direct child assessments and parent/caregiver interviews. ECLS-B will also analyze the relationship between risk factors at birth and the child's development through data available from the birth certificate, parent interviews, and direct child assessments. In addition, ECLS-B will collect data on the frequency and variability in child care arrangements.

B.1.1.2 Sampling Births in the Year 2000

Westat evaluated several sample designs for sampling children born in the year 2000 under a previous contract. This work was documented in the report, *An Examination of Alternative Approaches*

to Selecting a Sample of New Births, by Levine and Bryant (1997). The report identified logical alternatives and identified their advantages and disadvantages. The alternatives included sampling from birth certificates available at a variety of levels (NCHS, state registrars, county and local records offices), sampling hospitals and other birthing places, augmenting household surveys, using an area probability sample of households, and combinations of these approaches. Although the report did not select a desired alternative, it is clear that a birth certificate approach with the involvement of NCHS seemed the logical choice given coverage, budget, cooperation, and timing constraints. The other birth certificate designs lacked the desirable coordination through NCHS. The hospital-based approach involved too many additional levels of approval. Augmenting household surveys was not feasible given current household sample sizes. Area probability sampling of households involved large screening efforts and initial sample sizes (approximately 375,000 households required). A combination of approaches seemed worth considering only in states that would not cooperate in a birth certificate sample design.

The ECLS-B sample design uses the NCHS National Vital Statistics System, and NCHS receives the birth records from the state vital statistics departments. The use of these records as a sampling frame allows for a simple, two-stage sample with clustering effects limited to the PSU level and readily allows for oversampling of a number of subgroups of analytic interest. The use of the frame was negotiated between the National Center for Educational Statistics (NCES) and NCHS. Permission will need to be obtained from all the states with PSUs in the sample for samples of births occurring in those PSUs to be drawn from the state's birth certificates.

B.1.1.3 Collaborative Roles of Westat and NCHS

The ECLS-B sample is a collaborative effort of NCHS and Westat. Westat will draw the sample of PSUs and will determine the required sample sizes and necessary sampling rates in order to meet the ECLS-B precision requirements. NCHS will draw the actual sample of births and will give the birth certificate information, along with address and contact information, for the sampled births to Westat for field operations. Westat is responsible for the overall sample design and planning, in collaboration with NCHS. In particular, Westat and NCHS will collaborate closely in addressing issues of access to birth certificates, timeliness of the delivery of birth certificate records by the states to NCHS, and confidentiality restrictions, all of which affect the entire sample design. Consideration of these issues has led to critical decisions that have affected the sample and study design. The most notable example has

been the change of the timing of the initial assessment of sampled infants from 6 months to 9 months of age in light of an analysis of the dates of receipt of recent birth certificate data by NCHS.

B.1.1.4 Overall Sample Design and Characteristics

The ECLS-B sample design consists of a two-stage sample of PSUs and children born in the year 2000 within sampled PSUs. The PSUs will be metropolitan statistical areas (MSAs), counties, or groups of counties, and they will be selected with probability proportional to size. The measure of size used will be a function of the expected number of births occurring within the PSU in the year 2000. We have elected to sample births by place of occurrence for operational simplicity. This, in turn, requires the selection of a new PSU sample for ECLS-B since existing PSU samples (i.e., the Westat Master Sample of 100 PSUs and the Early Childhood Longitudinal Study, Kindergarten Class of 1998-99 (ECLS-K) sample of 100 PSUs) drawn with probabilities related to residence-based population data, introduce inefficiencies under occurrence-based sampling. Sections B.1.3.1 and B.1.3.2 discuss the advantages and disadvantages of using existing PSU samples.

Within the sampled PSUs, children born in the year 2000 will be selected by systematic sampling from birth certificates using the NCHS vital statistics record system. Different sampling rates will be used for births in different subgroups defined by race/ethnicity, birthweight, and plurality.

B.1.1.5 Birth Certificate Flow and Remaining Concerns

As initially planned, the first assessments were to be conducted with children at the age of 6 months. For this to be feasible, the sample of births would have to be selected some time earlier in order to allow time for locating and recruiting the appropriate households. Since the location and recruitment effort requires 2 months to carry out, the birth certificates would need to be available for sampling purposes within 3 full months after the month of birth if assessments are to be made around 6 months of age. For example, the birth certificates for children born in January 2000 would need to be available by May 1, 2000, in order to sample these children, locate and recruit the appropriate households, and assess the sampled child in July 2000.

A review of the receipt of 1997 birth certificate returns at NCHS revealed that there would be major difficulties with this schedule. Detailed analysis revealed that a large proportion of 1997 births was not received at NCHS within 3 full months after the month of birth. This proportion varies across months from a low of 22 percent in August to a high of 57 percent in January. Further review of the 1997 birth certificate returns by state revealed substantial differences across states.

The analysis suggested that although 6-month assessments did not appear feasible, in general, the birth certificates were received in time to permit a 9-month assessment design. This design requires that birth certificates be available for sampling within 6 full months after the month of birth. Analysis of 1997 returns revealed that, in most months, 96 percent or more of the birth certificates were received within 6 months, although the return rates for the first 3 months of the year were lower.

It should be noted that there has been an improvement in the speed of delivery of birth certificates from the states to NCHS in recent years, particularly as states have increased the use of computer records. Some further improvement in speed of delivery may occur between 1997 and the year 2000, when ECLS-B sampling begins. It should also be noted, however, that speed of return for a particular state can vary across years, with a state that previously had had an acceptable return record suddenly becoming problematic. We, therefore, plan to monitor state returns continuously up to and throughout the year 2000.

For any birth certificates not received by NCHS within the 6-month period, we will attempt to expedite the sampling and fielding of sampled births as soon as data are received in order to maximize the number of direct child assessments at Wave 1. In this regard, we plan to allow a window up to and including 12 months of age for the full interview. If the child is more than 12 months old by the time of contact, we will eliminate the direct child assessment from the Wave 1 interview, but collect the rest of the Wave 1 data. These children will be assessed and interviews conducted on the regular schedule beginning with Wave 2.

B.1.1.6 State Cooperation and Obtaining Addresses

State cooperation is vital to the sampling plan outlined here. The participation of NCHS in the study should lead to maximum cooperation given NCHS's role in the vital statistics system and its established relationship with the states. Related to state cooperation is the mechanism for obtaining

addresses for contacting sampled births. NCHS does not routinely receive address information from the states but has obtained this information for surveys in the past. Three different methods for obtaining addresses for sampled births have been considered.

1. NCHS selects the sample of births and then asks states to provide corresponding addresses.

2. The states select the samples of births and provide addresses along with the sampled births to NCHS.

3. NCHS obtains addresses for all births in sampled PSUs and selects the sample of births.

The third method has been chosen as the preferred approach for ECLS-B in light of schedule constraints, sampling process control, and burden on the states. However, one of the other methods may need to be used if a state does not accept that method.

B.1.1.7 Coverage of the Birth Certificate Frame and Exclusions

The research by Levine and Bryant (1997) suggests that birth certificates provide virtually complete coverage of children born in the United States, and NCHS has confirmed that this is the case. However, some states are likely to exclude births to mothers less than 15 years of age and children adopted at or very near birth from the sampling frame provided to NCHS. We estimate that approximately 0.14 percent and 0.1 percent to 0.6 percent of all births fall into these two categories. The exclusion of such a small percentage of the population cannot noticeably affect overall estimates or estimates for specific subgroups.

B.1.2 Analytic Subgroups and Sample Sizes

The sample for ECLS-B will consist of 15,205 children born in 2000. This sample will be selected from birth certificates in 100 PSUs. The field work will be spread over 8 years, involving 6 waves of data collection. We expect this sample to yield 12,141 and 9,939 completed parent interviews at Waves 1 and 6, respectively. With oversampling of certain subgroups of analytic interest, these overall sample sizes are designed to provide adequate precision for overall ECLS-B estimates and for estimates for specified analytic subgroups.

To date, nine analytic subgroups have been identified for which separate estimates are required. The subgroup definitions are based on three analytic domains: race/ethnicity, birth weight, and plurality. The nine subgroups are Hispanic; black; Asian/Pacific Islanders; white; very low birth weight; moderately low birth weight; normal birth weight; twins; and single births and other non twins.

The determination of the sample allocation to produce estimates of adequate precision for each of the analytic subgroups can be treated as a three-dimensional stratification problem. Using a mathematical programming approach, we present below a sample allocation that satisfies the precision requirements while taking into account the design effects introduced by differential weighting within subgroups.

The remaining sections provide more detail on the analytic subgroups, precision requirements, sample size solutions, response rate assumptions, and infant mortality adjustments that are required.

B.1.2.1 Analytic Subgroups Proposed to Date

As noted above, the sample design is based on nine analytic subgroups. These subgroups are as follows:

Race/ethnicity	Birth weight	Plurality
Hispanic	Very low birth weight	Twins
Black/non-Hispanic	Moderately low birth weight	Single births and other non twins
Asian/Pacific Islanders	Normal birth weight	
White/non-Hispanic, and all others		

The four groups in the race/ethnicity domain follow NCES definitions and are mutually exclusive and exhaustive. The Asian/Pacific Islander group is the rarest group and will require sampling at much higher rates than other groups. For sampling purposes, we will assume that the race/ethnicity of the child is the same as that reported for the mother on the birth certificate. It should be noted that the child's race/ethnicity reported in the survey will sometimes differ from the mother's race/ethnicity reported on the birth certificate. This is a major problem only in the case of Asian/Pacific Islanders (see Section B.1.2.7).

The two analytic subgroups of interest in the birth weight domain are those with very low birth weight and those with moderately low birth weight. The very low birth weight subgroup will include children with birth weights below 1,500 grams, whereas the moderately low birth weight subgroup will include children with birth weights between 1,500 and 2,500 grams. The analytic subgroup of interest in the plurality domain is twins. The last group given for each of these domains (normal birth weight and single births and other non twins) are included to provide an exhaustive classification of the population; but are not subgroups that require oversampling. The small proportions of births in the analytic subgroups of the birth weight and plurality domains are such that each subgroup will require appreciable oversampling in order to obtain adequate sample sizes.

B.1.2.2 Sample Size

ECLS-B is designed to be large enough to provide estimates of adequate precision for the nation as a whole and for various subgroups, including both the planned analytic subgroups described above and other subgroups (e.g., children living in rural areas, children in single parent families). Moreover, the sample needs to be large enough to allow for the attrition losses that will occur as the panel ages.

The initial design addressed only the race/ethnicity subgroups. It specified a sample of 1,524 completed Wave 1 interviews for Hispanics, for black/non-Hispanics and for Asian/Pacific Islanders, and 4,572 completed Wave 1 interviews for white/non-Hispanics. The sample size for the last of these groups was made three times larger than the rest because that group comprises the majority of all births. By selecting a sample of this size for white/non-Hispanics, the sampling fractions for this group, Hispanics and black/non-Hispanics are fairly similar; it is only the small Asian/Pacific Islander subgroup that requires a high degree of oversampling. Thus, this sample allocation leads to the need for little variation in the sampling weights, a feature that is beneficial for analyses that cut across the race/ethnicity classifications. Based on the assumed response rates discussed here, after attrition the resultant sample sizes at Wave 6 were expected to be 1,248 for the Hispanic, black/non-Hispanic, and Asian/Pacific Islander subgroups; and 3,744 for the white/non-Hispanic subgroup.

Subsequently, supplementary funds have been obtained to include additional subgroups of analytic interest as indicated in Section B.1.2.1. The overall sample size has been increased to raise the

sample sizes of very low birth weight infants, moderately low birth weight infants, and twins to a level that makes the precision of estimates for these subgroups equal to that for the race/ethnicity subgroups. It should be noted that the various analytic subgroups overlap with one another so that, for example, an increase in the sample of low birth weight infants will also increase the sample of twins and of the various race/ethnicity subgroups. There are two consequences of this overlap. First, it needs to be taken into account in determining the minimum overall sample size needed to satisfy all the precision requirements. The mathematical programming approach for solving this problem is discussed in the next section. Second, there will inevitably be variation in the selection probabilities, and hence in the sampling weights, for the sampled children within each subgroup. Thus, for example, in the Hispanic subgroup, low birth weight twins, non-low birth weight twins, low birth weight non-twins, and non-low birth weight non-twins will have different selection probabilities. As a result, the sample size in a subgroup does not serve as a valid index for the level of precision that will be obtained for subgroup estimates. The loss of precision associated with the variation in weights within a subgroup needs to be taken into account. This may be done by computing the *effective sample size* that reduces the actual sample size to compensate for variable weights (Kish, 1992).[1] Section B.1.2.3 will present the actual sample sizes needed in the various subgroups to yield an effective sample size of 1,524 completed Wave 1 interviews for each subgroup (4,572 for the white/non-Hispanic subgroup). The effective sample size of 1,524 corresponds to the precision specification for the initial design.

The following examples present an indication of the approximate levels of precision of subgroup estimates based on an effective sample size of 1,524 completed interviews at Wave 1, with a resultant sample size of 1,248 at Wave 6. The first four examples are concerned with the relative standard errors of cross-sectional estimates, and the last two are concerned with the power of significance tests.

- Consider a sample estimate of the population percentage of a subgroup with a given characteristic at Wave 1. The relative standard error of the sample estimate (p) may be approximated by

$$\mathrm{RSE}(p) = \sqrt{[1 + (b-1)\rho](100 - P)/nP} \quad ,$$

where b is the average subgroup sample size per PSU, ρ is the intraclass correlation for the characteristic within PSUs, P is the population percentage of the subgroup with the characteristic, and n is the effective sample size.

[1] The effective sample size may be computed as **Error! Objects cannot be created from editing field codes.**, where **Error! Objects cannot be created from editing field codes.** is the weight of sampled element i. Note that, as defined here, the effective sample size compensates only for variation in weights; it does not compensate for the effects of clustering.

In this formula, $n = 1{,}524$ and, with 100 PSUs, $b = 15.24$. For illustrative purposes, we assume $\rho = 0.04$, although this is probably on the high side for most estimates. If P is 50 percent, then $\text{RSE}(p) = 0.032$, (i.e., a relative standard error of about 3%). If P is 30 percent, $\text{RSE}(p) = 0.049$.

- Consider next a similar estimate for a characteristic at Wave 6, with the effective sample size reduced to 1,248 because of attrition. Applying the formula above with n=1,248 and b=12.48 yields $\text{RSE}(p) = 0.034$ for $P = 50$ percent and $\text{RSE}(p) = 0.052$ for $P = 30$ percent.

- Consider an estimate of a population mean $\overline{Y} = 50$ with a standard deviation of $S = 15$ at Wave 1. The relative standard error of the sample estimate ($\bar{y}$) may be approximated by

$$\text{RSE}(\bar{y}) = (S / \overline{Y})\sqrt{[1 + (b-1)\rho] / n}$$

where the notation is as defined above. Again, for illustrative purposes we assume $\rho = 0.04$. Then $\text{RSE}(\bar{y}) = 0.010$.

- Consider the example above but for Wave 6 with the smaller effective sample size. In this case $\text{RSE}(\bar{y})$ is increased but, with rounding, it remains at 0.010.

- Consider now a significance test to determine whether there is a difference between the percentages of children with a given characteristic in two mutually exclusive analytic subgroups. Suppose that in one subgroup the percentage is 30 percent and in the other it is 36 percent, (i.e., 20% larger). For simplicity, we treat the samples as independent, ignoring the correlation occurring because both samples are drawn from the same PSUs; as a result, the power calculated here is an underestimate. We assume Wave 1 effective sample sizes of 1,524 for each group. For the calculations these are reduced by dividing by $1 + (b-1)\rho = 1.5696$ (with $\rho = 0.04$) to deal with clustering effects. Based on the above numbers, a two-tailed test and a 5 percent significance level, the power of the test is about 0.80. An equivalent test for Wave 6, with the reduced sample size, would have a power of about 0.75.

- Finally, consider a significance test to determine whether there has been a change in a percentage between an earlier wave and Wave 6 within a subgroup. For simplicity we assume that the analysis is restricted to Wave 6 respondents and that all 1,248 Wave 6 respondents were respondents at the earlier wave. We also assume that the correlation of the responses between the two waves is 0.6 and that the true change is a 20 percent increase from $P_1 = 30$ percent at the earlier wave to $P_2 = 36$ percent at Wave 6. For this situation, with a two-tailed test and a significance level of 5 percent, the power of the test is almost 99 percent. With a 1 percent significance level, the power is a little over 94 percent.

Expected Response Rates

The response rates assumed for ECLS-B are based on Westat's recent experience on other large national panel studies and on response rates reported by other organizations on panel surveys. Table B1-1 presents a comparison of wave response rates for three longitudinal surveys: the Medicare Current Beneficiary Survey (MCBS), the Medical Expenditure Panel Survey—Household Component (MEPS), and the Survey of Income and Program Participation (SIPP). The first two surveys are continuing Westat studies, and the last is conducted by the Census Bureau. The data in Table B1-1 show that initial interview response has declined since 1990, with a lesser amount of decline and higher response rates for the Census survey. This seems to conform to the conventional wisdom that the Census Bureau enjoys a few response rate points advantage over private organizations. However, this advantage is decidedly less pronounced during the later waves of these surveys.

Table B1-1. Comparison of response rates by wave for selected panel surveys

Survey	Panel	Wave 1 RR%	Wave 2 RR%	Wave 3 RR%	Wave 4 RR%	Wave 5 RR%	Wave 6 RR%	Overall RR% after 6 Waves
MCBS	1991	87	94	96	97	98	98	73.0
	1992	84	95	96	97	98	99	71.4
	1993	83	95	98	96	98	98	71.1
	1994	83	95	97	97	98	99	71.4
	1995	83	94	98	97	--	--	--
	1996	83	--	--	--	--	--	--
MEPS	1996	83	95	96	--	--	--	--
	1997	83	--	--	--	--	--	--
SIPP	1990	93	94	98	98	97	98	79.8
	1991	92	94	98	98	98	99	79.8
	1992	91	94	98	98	97	98	78.7
	1993	91	94	98	98	98	97	77.6
ECLS-B	Predicted	85	93	95	96	98	98.5	69.5

The initial sample for MEPS comes from completed National Health Interview Survey (NHIS) interviews. There is up to a year-and-a-half lag between the NHIS and the first MEPS contact attempt. About 3.5 percent of these initial contacts are never successful because households are unlocatable, all members of a household have died or are similarly isolated from contact, or no proxy is available for the ill or incapacitated. The comparable rate for MCBS is about 3 percent. We believe that noncontact rates on ECLS-B will be very low. Thus, there is good reason to believe that our expected

initial Wave 1 rate of 85 percent is attainable and the rates at subsequent waves will be achieved. Table B1-2 gives the expected response rates for ECLS-B, by wave.

Table B1-2. Predicted response rates by wave

Wave	Response rate	Actual completes
Selected sample	100%	15,205
1	85%	12,141*
2	93%	11,291
3	95%	10,727
4	96%	10,298
5	98%	10,092
6	98.5%	9,939
Overall response	69.5%	9,939

* This number is slightly lower than that obtained by applying the Wave 1 response rate to the selected sample because it also reflects assumed losses due to infant mortality.

Nonrespondents to Wave 1 will be excluded from subsequent waves whereas nonrespondents to other waves will be included in the data collection efforts of subsequent waves. This distinction is made because of the expected qualitative differences between nonrespondents to Wave 1 and those to subsequent waves. Every effort will be made to contact and recruit all sampled cases for Wave 1. Inability to obtain response to Wave 1 will occur because of a failure to locate the sampled case, a failure to contact the case after numerous attempts, or a hard refusal where significant refusal conversion has not been successful. In each of these cases, the reasons for nonresponse at Wave 1 will be severe enough that we anticipate little return on any further efforts in subsequent waves.

B.1.2.3 Sample Size as a Random Variable

The actual sample sizes achieved for the various analytic subgroups in ECLS-B will be somewhat different from the targeted numbers. This will occur for a variety of reasons, including differences between actual and expected response rates, misclassification rates and infant mortality rates. Changes in the year 2000 birth population relative to the population data used to set sampling rates will also result in differences between actual and expected sample sizes.

In addition, the actual ECLS-B subgroup sample sizes are random variables that are subject to variability just as ECLS-B estimates are subject to sampling error. That is to say, there would be some

variation in the actual ECLS-B sample sizes across repeated implementations of the sample design even if the rates discussed above were correct and the sampling rates were correct relative to the year 2000 births and target sample sizes. However, we expect the random variation to be relatively small. We have decided to compensate for this variability by slightly increasing the initial ECLS-B subgroup sample sizes. The compensation makes it more likely that the actual and effective sample sizes stay at or above a level that meets the ECLS-B precision requirements. The compensation applies to all subgroups except the white, normal birth weight, and single births and other non twins subgroups, which already have a sample size in excess of that needed to meet the ECLS-B precision requirements. The increase in sample size required for each of the other subgroups is roughly calculated by assuming that the effective sample size for each subgroup is a random variable following a Poisson distribution with a mean equal to the expected sample size and a standard error equal to the square root of the expected sample size. Under these assumptions, we have calculated an adjusted effective sample size that gives us a 95 percent probability of meeting or exceeding the target effective sample size by solving the following equation:

$$a_{hij} - (1.645)\sqrt{a_{hij}} = t_{hij} \ ,$$

where a_{hij} = the adjusted effective sample size for a particular subgroup

t_{hij} = the target effective sample size for a particular subgroup (1,524).

Solving the equation for t_{hij} = 1,524 yields an adjusted effective sample size of 1,590. The Poisson distribution is used as an approximation to the Binomial distribution followed by the expected sample sizes. Westat has used this upward adjustment previously in the U.S. Department of Agriculture's Supplemental Children's Survey (SCS) of the Continuing Survey of Food Intakes by Individuals (CSFII).

B.1.2.4 Mathematical Programming Solution for Sample Allocation

As discussed above, the required effective sample size for each of the analytic subgroups is set at 1,590, except in the case of non-Hispanic whites. This section describes how these effective sample sizes are achieved, taking account of the overlap between subgroups and the differential weights.

The domains discussed in Section B.1.2.1 can be considered as three separate stratification factors, each with a particular number of levels. Thus, the race/ethnicity domain has four levels (white; black; Asian/Pacific Islander; and Hispanic), the birth weight domain has three levels (very low birth

weight, moderately low birth weight, and normal birth weight) and the twins domain has two levels (twins, single births and other non twins). Treating each domain as a stratification factor, the sample allocation problem can be handled as a multidimensional stratification problem. Specifically, we have a three-dimensional problem that can be visualized as a cube with 24 cells (4 x 3 x 2 levels) with precision requirements on the margins. This kind of problem has been solved in the literature as either a linear or a mathematical programming problem. Three specifications are required for solving such a problem:

- A set of decision variables;
- An objective function in terms of the decision variables to be maximized, minimized, or to approach a particular value; and
- A set of constraints on the decision variables.

Our three-dimensional stratification problem can be dealt with by:

- Making the sample sizes per cell the decision variables;
- Defining the objective function as the sum of the sample sizes per cell, and specifying that the value of this function is minimized;
- Requiring that the sample sizes per cell be greater than or equal to 1 and less than or equal to the population size per cell; and
- Requiring that the effective sample sizes by level of domain to be greater than or equal to the targets.

An additional specification is required to calculate the variance effects of differential weighting by level of domain and hence the effective sample sizes by level of domain.

The problem can be expressed in the following mathematical programming notation:

Minimize: $\sum_{h}^{H}\sum_{i}^{I}\sum_{j}^{J} n_{hij}$;

Subject to: $n_{hij} \geq 1$;

$n_{hij} \leq N_{hij}$;

$$\frac{\sum_{I}\sum_{J} n_{hij}}{d_h} \geq t_h \ ;$$

$$\frac{\sum_{H}\sum_{J} n_{hij}}{d_i} \geq t_i \ ;$$

$$\frac{\sum_{H}\sum_{I} n_{hij}}{d_j} \geq t_j \ ;$$

where

n_{hij} is the actual sample size in cell hij,

N_{hij} is the population size in cell hij,

t_h, t_i, t_j are the target effective sample sizes of levels h, i, j in domains H, and I, J; and

$d_h = \frac{n_h}{N_h^2}\sum_{I}\sum_{J}\frac{N_{hij}^2}{n_{hij}}$ etc., are the variance effects of differential weighting for levels h, i, j in domains H, I, J (Kish, 1992).

B.1.2.5 Solving for Required Number of Wave 1 Completes

The solutions for Wave 1 completes that satisfy the constraints given in Section B.1.2.4 while minimizing the total sample size were obtained using the Solver feature within Excel. Table B1-3 gives the required number of Wave 1 completes for each cell, yielding a total sample of 12,141 Wave 1 completes. These Wave 1 completes will in turn determine the number of births to be sampled given response rate and infant mortality assumptions.

Table B1-4 gives the number of Wave 1 completes for each analytic subgroup, along with the design effect from differential weighting—labeled the weighting effect—and the effective sample size. The table shows that the Wave 1 completes given in Table B1-3 satisfy the Wave 1 target of a

minimum effective sample size of 1,590 for each analytic subgroup; for non-Hispanic whites, the target is 4,572, and that is also satisfied.

Table B1-3. Required Wave 1 completes by race/ethnicity, birth weight, and plurality

Race/ethnicity	Birth weight	Twins	Single births and other non twins	Total
Total		1,667	10,473	12,141
White/non-Hispanic, and all others	VLBW	176	609	785
White/non-Hispanic, and all others	MLBW	423	583	1,006
White/non-Hispanic, and all others	NBW*	479	3,969	4,448
Black/non-Hispanic	VLBW	91	433	524
Black/non-Hispanic	MLBW	129	320	449
Black/non-Hispanic	NBW*	89	1,223	1,312
Asian/Pacific Islander	VLBW	10	50	60
Asian/Pacific Islander	MLBW	28	96	124
Asian/Pacific Islander	NBW*	26	1,429	1,455
Hispanic	VLBW	38	187	225
Hispanic	MLBW	88	179	267
Hispanic	NBW*	91	1,397	1,488

* NBW: Normal birth weight.

Table B1-4. Wave 1 completes, weighting effects, and effective Wave 1 completes by level of domain

Group	Wave 1 completes	Weighting effect	Effective Wave 1 completes
Total	12,141	1.4624	8,302
White/non-Hispanic, and all others	6,238	1.3644	4,572
Black/non-Hispanic	2,284	1.4365	1,590
Asian/Pacific Islander	1,639	1.0310	1,590
Hispanic	1,979	1.2448	1,590
VLBW	1,594	1.0025	1,590
MLBW	1,845	1.1600	1,590
NBW	8,702	1.1988	7,259
Single births and other non twins	10,473	1.3223	7,920
Twins	1,667	1.0487	1,590

B.1.2.6 Expected Wave 6 Yields

The expected numbers of Wave 6 completes are easily calculated based on the expected number of actual Wave 1 completes given in Table B1-4 and the wave specific response rates assumed in Table B1-2. The expected numbers of Wave 6 completes are about 81.9 percent of the Wave 1 completes. They are given in Table B1-5, together with the weighting effects and effective sample sizes, for Wave 6 analytic subgroups.

Table B1-5. Wave 6 completes, weighting effects, and effective sample sizes by level of domain

Group	Wave 6 completes	Weighting effect	Effective sample size
Total	9,939	1.4624	6,796
White/non-Hispanic, and all others	5,107	1.3644	3,743
Black/non-Hispanic	1,870	1.4365	1,302
Asian/Pacific Islander	1,342	1.0310	1,302
Hispanic	1,620	1.2448	1,302
VLBW	1,305	1.0025	1,302
MLBW	1,510	1.1600	1,302
NBW	7,124	1.1988	5,943
Single births and other non twins	8,574	1.3223	6,484
Twins	1,365	1.0487	1,302

Note that the weighting effects in Table B1-5 are equal to the weighting effects used in Table B1-2, which relates to Wave 1. However, the overall design effects of survey estimates may be different at different waves. In addition to the weighting effects, the overall design effects for Wave 6 are dependent on the following:

- The average cluster size for Wave 6, which will be lower than that for Wave 1.
- The intraclass correlation at Wave 6, which may be lower than that at Wave 1 due to children moving between Waves 1 and 6 and being exposed to different environments.
- Nonresponse weighting adjustments, which will be larger at Wave 6 than at Wave 1 because of sample attrition.

B.1.2.7 Race/Ethnicity Misclassification

A child's race and ethnicity are not collected on the U.S. Standard Certificate of Live Birth. For sampling purposes we, therefore, in general propose to designate a child's race and ethnicity as those reported for the mother. There will be some misclassification involved in this designation for two reasons. First, the child might have a different designation from the mother. Second, the mother's designation given on the birth certificate may differ from that reported in the survey, and the latter is generally likely to be the preferred designation for analysis purposes. We should note that the child's race/ethnicity is first captured during the Wave 1 interview.

Race/ethnicity misclassification will cause some loss in sampling efficiency. The loss will be minor for white/non-Hispanics, black/non-Hispanics, and Hispanics since the sampling fractions for these subgroups are similar. However, because of the substantially larger sampling fraction to be used for Asian/Pacific Islander children, misclassification is a more serious issue for this subgroup. Asian/Pacific Islander children classified otherwise for sampling purposes will be sampled at a lower rate and children falsely classified as Asian/Pacific Islanders will be oversampled. The former type of misclassification is the more serious, but the latter is also of some concern.

The NCHS study of the comparability of birth certificate data with responses to the 1988 Maternal and Infant Health Survey (Schoendorf et al., 1993) provides some evidence on the misclassification issue. That study found that 216 mothers were so classified on the mother's questionnaire. There were 203 mothers who were classified as Asian/Pacific Islander by both sources. (Note that the sample contained an overrepresentation of low birth weight and black infants, but no adjustments were made to compensate for this in the above numbers. Also, both sources have some cases where race is missing.) There were changes in both directions, with a net effect of more Asian/Pacific Islanders being reported on the mother's questionnaire.

The loss of efficiency for the Asian/Pacific Islander subgroup arising from race/ethnicity misclassifications can be counteracted by selecting a larger sample of children classified as Asians or Pacific Islanders from data on their birth certificates. The increase in sample size needs to address both the reduction in the subgroup sample size from the assignment of some children sampled as Asians or Pacific Islanders to other subgroups, and the addition of children classified in another subgroup for sampling purposes who turn out to be Asian or Pacific Islanders. The problem with the additional children is that they are sampled at lower rates, and hence have much larger weights than those sampled

as Asians or Pacific Islanders. The resultant variation in weights decreases the precision of the estimates for this subgroup. Approximate calculations indicate that the Asian/Pacific Islander subgroup sample size would need to be increased by 25 percent to fully compensate for the misclassification effect.

Another approach for addressing the misclassification problem is to increase the likelihood that an Asian or Pacific Islander child is so classified for sampling purposes. We propose to attempt to achieve this outcome by assigning a child with either parent reported as Asian or Pacific Islander on the birth certificate to this subgroup for sampling purposes. Hence, all such children will be sampled at the higher rate.

At this point, the proposed modification to the sample sizes outlined earlier is to increase the sample of children classified as Asian/Pacific Islander according to the mother's or father's race/ethnicity not by the full 25 percent, but by 10 percent. This 10 percent increase is reflected in tables throughout this document. Some trimming of the weights of Asian/Pacific Islander children classified otherwise for sampling purposes may be appropriate when the weights are developed in order to limit the variance inflation from variable weights. The details of this modification for handling the Asian/Pacific Islander misclassification issue will be refined as the sample design is finalized.

B.1.2.8 Adjustments for Infant Mortality

The initial sample sizes required need to be adjusted for infant mortality. The Wave 1 sample aims to represent children living at 9 months of age. Infant deaths prior to this age are not nonresponse, but they do reduce the sample size. Although all analytic subgroups experience some infant mortality, the issue is particularly important for the very low birth weight, and to a lesser extent, for the moderately low birth weight subgroups. The infant mortality rate for the former subgroup is approximately 26 percent while that for the latter subgroup is approximately 1.74 percent. The infant mortality rate for the normal birth weight group is 0.28 percent.

Adjustments for infant mortality can be readily made at the level of the three sampling domains, using data available in standard NCHS reports. These reports do not provide information at the level of the 24 separate groups used for sampling (see Table B1-3), but adjustments made on the basis of the data for domains should suffice.

We propose to build infant mortality adjustments into the initial sample sizes required. Most of the infant deaths should occur early enough for the states to successfully screen sampled births against death records and inform NCHS of the deaths prior to the fielding of the cases. Thus, we will be able to avoid contacting the household involved. This expectation is based on data that indicate over 65 percent of infant mortality occurs within the first 27 days of life (MacDorman and Atkinson, 1998).

B.1.2.9 Required Initial Sample Sizes

Adjusting the Wave 1 sample sizes presented in Tables B1-3 and B1-4 for the expected Wave 1 response rate, race/ethnicity misclassification rates, and infant mortality rates leads to the required initial sample sizes given in Tables B1-6 and B1-7. These are the sample sizes in the various subgroups that need to be selected initially. Some will have died before reaching the age of 9 months and some will be Wave 1 nonrespondents. No data will be collected for these cases at any wave (no attempt will be made to contact Wave 1 nonrespondents at later waves).

Table B1-6. Initial sample sizes by cell

Race/ethnicity	Birth weight	Twins	Single births and other non twins	Total
Total		2,116	13,089	15,205
White/non-Hispanic, and all others	VLBW	279	968	1,247
White/non-Hispanic, and all others	MLBW	506	698	1,204
White/non-Hispanic, and all others	NBW*	565	4,682	5,247
Black/non-Hispanic	VLBW	145	688	832
Black/non-Hispanic	MLBW	154	383	537
Black/non-Hispanic	NBW*	105	1,443	1,548
Asian/Pacific Islander	VLBW	18	88	106
Asian/Pacific Islander	MLBW	37	126	163
Asian/Pacific Islander	NBW*	34	1,854	1,888
Hispanic	VLBW	61	297	358
Hispanic	MLBW	105	214	319
Hispanic	NBW*	107	1,648	1,755

* NBW: Normal birth weight.

Table B1-7. Initial sample sizes by level of domain

Group	Initial sample size
Total	15,205
White/non-Hispanic, and all others	7,699
Black/non-Hispanic	2,917
Asian/Pacific Islander	2,157
Hispanic	2,432
VLBW	2,544
MLBW	2,223
NBW	10,438
Single births and other non twins	13,089
Twins	2,116

B.1.2.10 Sampling Throughout the Year 2000

Births will be sampled systematically throughout the year 2000 on a flow basis within the ECLS-B sampled PSUs. The within-PSU sampling rate will vary by sampling stratum and will depend on the PSU selection probability such that, within each stratum, each sampled birth has an equal overall probability of selection. The sampling strata will be defined by the full intersection of all levels of all domains as presented in Section B.1.2.5, Table B1-3.

NCHS receives births from the states on a flow basis. The number of births received and months of birth included vary by state and throughout the year. After a particular submission is received, births will be selected within sampling strata based on appropriate selection intervals continuing from where the last sampling left off. The new births may be sorted by variables like sex, mother's education and date of birth, within each stratum prior to sampling. The systemic selection will then provide implicit stratification by ensuring representation across variables not included in the explicit stratification.

B.1.2.11 Sample of Resident Fathers and Child Care Providers

Where applicable, ECLS-B will collect data from resident fathers and child care providers for each sampled child in order to provide valuable contextual information for the child. We should note that the feasibility of collecting data on nonresident fathers will be evaluated in the ECLS-B field test.

We estimate that 6,382 resident father interviews will be obtained at Wave 1, and that they will be distributed by race/ethnicity as shown in Table B1-8.

Table B1-8. Resident father sample sizes

Group	Children Wave 1 completes	Expected percent with resident fathers*	Expected resident father response rates	Expected resident father interviews
Total	12,141	65.7%	80.0%	6,382
White/non-Hispanic, and all others	6,238	80.0%	80.0%	3,992
Black/non-Hispanic	2,284	30.0%	80.0%	548
Asian/Pacific Islander	1,639	68.0%	80.0%	892
Hispanic	1,979	60.0%	80.0%	950

* Based on the 1995 Monthly Vital Statistics Report, 45, 11.

Information on child care providers will be collected during the second interviews with the parents when the children are 18 months of age, and the principal child care providers will then be surveyed. The America's Children 1998 Report indicates that 54 percent of children under the age of 6 were receiving some type of regular care from persons other than their parents. As a rough approximation, we therefore estimate that one-half of the children in the sample will be in some child care arrangement at 18 months and expect about an 80 percent response rate to the child care provider questionnaire, which should yield child care provider data for about 4,878 sampled cases. We expect the distribution of the ECLS-B sample of children in child care arrangements at Wave 2 by type of child care to be roughly as displayed in Table B1-9. This distribution is based on 1995 National Household Education Survey (NHES) data.

Table B1-9. Distribution of ECLS-B sample at Wave 2 by the type of care arrangement*

	Total Wave 2 Completes	In parental care	In non-parental care	In relative care	In non-relative care	In organized child care facility
Wave 2 completes	11,291	5,194 (46%)	6,097 (54%)	2,145 (19%)	2,258 (20%)	2,145 (19%)
Wave 2 completes with responding child care provider	N/A	N/A	4,878	1,716	1,806	1,716

* Percentages do not add to 100 percent because some children participated in more than one type of nonparental arrangement.

B.1.3 PSU Sample

B.1.3.1 PSU Sample Design

We will draw a sample of 100 PSUs for ECLS-B with probability proportional to a measure based on births by occurrence. The PSUs will be formed using MSA definitions in large metropolitan areas and using NCHS Health Service Areas (HSAs) (NCHS Publication, 1991) as a guide for combining counties to form other PSUs. The HSA definitions identify areas that are relatively self-contained in terms of health service supply and demand and should, therefore, be useful for constructing ECLS-B PSUs. The HSA definitions are especially useful in forming PSUs in rural areas, which often need to combine several counties because of the relatively low incidence of births.

Some PSUs will be large enough that they are selected with certainty, so that each of them is its own stratum. The remaining PSUs will be stratified on variables like census region, MSA status, minority status, and median income. Two PSUs will be selected per stratum with probability proportional to size, using Durbin's method.

We have decided to sample births by occurrence because of the operational simplicity it offers. Births are registered in the state of occurrence, although birth certificates include the states and counties of both occurrence and residence. Membership in an ECLS-B PSU could, therefore, be determined based on either occurrence or residence. Each of these approaches has its advantages and disadvantages. The major attraction of sampling by occurrence is that it simplifies the sample selection. States need to be asked to provide the birth certificates only for births occurring in the selected PSUs in their own state. Only states that contain sampled PSUs need to provide certificates for sampling.

In contrast, sampling by residence would require that all states participate in ECLS-B, regardless of the states in which the ECLS-B PSUs happen to fall. This requirement is necessary because the resident of a given PSU in one state may give birth in another state. Also, each state should be asked for births to residents of any of the 100 ECLS-B PSUs, at least in theory

The disadvantage to sampling by occurrence as compared to sampling by residence is some increase in travel cost because of the wider geographical spread of births sampled by place of occurrence. To illustrate, in 1995, 51.8 percent (2,018,528) of all births (3,899,589) occurred in ECLS-K PSUs. Of the births occurring in the ECLS-K PSUs, 5.1 percent (103,585) resided outside any of those PSUs, and

0.1 percent (2,483) resided outside the states that contain those PSUs. An evaluation of the geographical and temporal spread of the Wave 1 sample and consideration of the increased geographical spread in later waves due to mobility has lead to the conclusion that the somewhat wider geographical spread of an occurrence-based sample is not a serious disadvantage.

We have considered the potential analytic benefits and cost savings that could result from using the same PSUs or maximizing the overlap of PSUs in the ECLS-K and ECLS-B sample designs. The potential analytic benefits could occur in two distinct areas. First, it is possible that the analytic potential of the ECLS-B and ECLS-K cohorts can be increased by combining the data from the two separate surveys through statistical matching or data fusion techniques. These techniques require one or more variables in common between the two surveys along with high correlations between the common variables and the variables of interest that are available singly. In this context, PSU could be one of the variables in common. In order for this technique to be successful, however, there must be extremely high correlations between the common variables and the other variables of interest. In this regard, we do not expect PSU to be highly correlated with the variables of interest and, therefore, expect little to be gained by using the same PSUs. Second, the precision of estimates of change across time in cross-sectional statistics between the ECLS-K and ECLS-B cohorts could benefit from using a number of PSUs in common for the two surveys. We expect the increase in precision for such estimates to be small, however. The analytic benefits from maximizing the overlap between ECLS-K and ECLS-B PSUs appear limited.

We have also considered the potential field cost savings that could result from maximizing the overlap between the ECLS-K and ECLS-B PSUs. A review revealed that there are some modest cost savings from being able to use the same field staff. Maximizing overlap between ECLS-B and ECLS-K PSUs requires modification of a linear programming procedure, developed by Causey et al. (1985). The procedure is quite complex in this case because the PSU measures of size, the stratification of PSUs, and the PSU definitions are all different for the two samples. We expect the development cost of implementing the modified procedure to meet or exceed the savings in field costs discussed above and, therefore, do not recommend maximizing overlap with ECLS-K.

B.1.3.2 Sampling Births within PSUs

Births occurring throughout the year 2000 will be sampled systematically on a flow basis (i.e., as they are received at NCHS) within the ECLS-B sampled PSUs. Sampling will continue until the year 2001, perhaps until June 2001 or later, to allow time for December 2000 births to arrive at NCHS.

The within-PSU sampling rate will vary by sampling stratum, where the sampling strata are the cells in the full intersection of all levels of all domains as presented in Section B.1.2.5, Table B1-3. The within-PSU sampling rate for a stratum will depend on the PSU selection probability and will be determined to give each sampled birth in a stratum the same overall probability of selection. The current provisional overall probabilities of selection for each of the strata are given in Table B1-10.

Table B1-10. Selection probabilities by sampling strata

Race/ethnicity	Birth weight	Twins	Single births and other non twins
White	VLBW	0.049725	0.043699
White	MLBW	0.019202	0.007022
White	NBW	0.017733	0.002081
Black	VLBW	0.049797	0.043775
Black	MLBW	0.019301	0.007291
Black	NBW	0.017838	0.002841
Asian/Pacific Islander	VLBW	0.056410	0.050008
Asian/Pacific Islander	MLBW	0.023535	0.012938
Asian/Pacific Islander	NBW	0.022026	0.010482
Hispanic	VLBW	0.049776	0.043750
Hispanic	MLBW	0.019269	0.007203
Hispanic	NBW	0.017803	0.002613

The within-PSU selection probabilities for each of the 24 sampling strata will be determined from the following equation:

$$P_{hijk}(\beta|\alpha) = P_{hij}(\alpha\beta)|P_k(\alpha),$$

where

$P_{hijk}(\beta|\alpha)$ is the within-PSU selection probability for cell *hij* in PSU α;

$P_{hij}(\alpha\beta)$ is the desired overall selection probability for a birth in cell *hij* (i.e., the rate given in Table B1-10); and

$P_k(\alpha)$ is the probability of selection for ECLS-B PSU α.

Note that the within-PSU sampling rates cannot exceed 1. As can be seen from the above equation, this implies that the PSU selection probability must be no less than the overall selection probability for every sampling stratum. The construction of PSUs has been carried out to satisfy this condition; counties are combined to form PSUs that contain sufficient births for this purpose.

B.1.3.3 Back-up Plans

The implementation of the ECLS-B sampling design requires the cooperation of the states that contain sampled PSUs. Those states will be asked to grant permission for the use of their birth certificates for the year 2000 as a sampling frame for the survey and, if permission is granted, then to provide the birth certificates for the sampled PSUs in a timely manner so that sampling can be effected before the child has reached the age of 6 months. In addition, the states will be asked to provide the residential addresses for the mothers whose births occurred in the sampled PSUs so that the mothers can be contacted. There are two main ways in which these requirements may fail.

First, some states may decline permission for their birth certificates to be used as a sampling frame. This outcome is expected to occur rarely, if at all. Since it is important that the sample be nationally representative, every effort will be made to secure the cooperation of the states with sampled PSUs. If a state that accounts for only a small percentage of U.S. births declines, then a substitution procedure will be applied. That procedure will substitute a matched PSU from a nearby state for the sampled PSU in the state that declines. If a state with a larger proportion of the U.S. births declines, the substitution procedure is more problematic, but may nevertheless be the preferred solution. We will pre-assign substitute PSUs to a few of the sampled PSUs that are located in states where cooperation is the most uncertain. The state containing the substitute PSU will be asked up front to provide birth certificates

for this PSU along with the other originally sampled PSU(s) located within the state. The birth certificates from the substitute PSU will be sampled and fielded, if necessary. This approach represents a pre-emptive strategy to compensate for state cooperation problems.

An alternative solution that has been considered is to select a sample of hospitals in the sampled PSUs and then select a sample of births occurring in those hospitals. There are, however, some severe problems with this solution relating to obtaining hospital cooperation, obtaining hospital institutional review board (IRB) approval, and difficulties in implementing cost-effective sampling procedures in the hospitals. These problems are likely to make this solution incapable of being activated quickly enough in all cases, expensive, and hence, infeasible.

A state may give permission for the use of its birth certificates as the ECLS-B sampling frame, but fail to deliver the certificates in time for all of them to be sampled by the time the children reach the age of 6 months (see Section B.1.1.5). In this case, we will expedite the sampling and the fielding of the sampled births in an attempt to obtain direct child assessments by 9 months of age. However late the birth certificates are received, they will be sampled, and the sampled children will be included in the survey. If the child is under 12 months of age at the time of contact, the direct child assessment will be administered. If the child is more than 12 months old at that time, the Wave 1 direct child assessment will be eliminated, but the rest of the Wave 1 data collection will be conducted.

B.1.4 Data Weighting

Procedures to be followed in weighting the ECLS-B will be similar to those used on other complex panel sample surveys. It is common practice in panel surveys to compute a number of different sets of weights that are appropriate for analyses that involve data collected in different sets of waves. These different sets of weights are needed to compensate for varying nonresponse across the waves. We will limit the discussion here to the first four waves. However, the general strategy presented below applies to more than four waves.

For example, in ECLS-B four separate sets of weights may be required for cross-sectional analyses of each of the first four waves of data collection individually, with the weights for each wave being developed to compensate for the nonrespondents at that particular wave (and probably additional sets of weights for the child care provider and resident father data collections). In addition, a set of panel

weights will be required for analyses of the four waves jointly. It is possible that other sets of weights will also be needed for different combinations of waves (e.g., Waves 1 and 4 only). The number of sets of weights required depends on how wave nonresponse is handled, which combinations of waves are of analytic interest, and the patterns of wave response/nonresponse. If imputation is used to fill in responses for wave nonrespondents, fewer sets of weights will be required. Westat will examine the question of how many sets of weights are needed for ECLS-B in consultation with NCES. We will make a recommendation for the sets of weights to be computed and will carry out the computations for the sets of weights chosen.

B.1.4.1 Base Weights

The starting point in developing any of the sets of weights is the calculation of a base weight that is the reciprocal of the probability of selection for each sampled birth. This probability will be based on the PSU selection probability and the within-PSU sampling rate used at the time of selection. If the sampling rate is changed at some point to adjust expected yields, the appropriate sampling rate for a given birth will be used. Overall sampling rates that are consistent with the objectives and assumptions outlined in Section B.1.2 above are given in Table B1-10. These are preliminary estimates that will be adjusted later as more current information on births is obtained. Note that the rates combine the PSU selection probability and the within-PSU sampling rate for the particular subgroup. Thus, in small sampled PSUs, the within-PSU sampling rate can be fairly high.

B.1.4.2 Nonresponse Adjustment

Nonresponse can occur in two forms, unit nonresponse and item nonresponse. Unit nonresponse occurs when a sampled and eligible unit fails to provide any of the data required. Item nonresponse occurs when a sampled and eligible unit fails to provide one or more of the data items required. Unit nonresponse is typically compensated for by weighting adjustments, whereas item nonresponse is typically adjusted for by imputation. This section will focus on unit nonresponse adjustments.

The distinction between unit nonresponse and item nonresponse is fairly straightforward in one-time, cross-sectional surveys but becomes blurred in panel surveys like ECLS-B. Take for example

the case when data are available for a sampled child for all but Wave 2 (and all data are missing for Wave 2). This situation could be treated as unit nonresponse relative to Wave 2, but item nonresponse relative to the entire ECLS-B. We generally expect to treat situations like this as unit nonresponse and will make the appropriate weighting adjustments. However, we will review the pattern and frequency of such events, and if the review suggests that imputation is a better strategy, we will impute for certain missing waves.

The unit nonresponse adjustment factor will be calculated within a nonresponse adjustment cell as the ratio of the sum of weights for sampled and eligible units to the sum of weights for eligible and responding units. The nonresponse adjustment cells will be based on the data available for both respondents and nonrespondents, with more elaborate cell definitions being possible in subsequent waves, taking advantage of the data gathered in prior waves. Unit nonresponse adjustments for Wave 1 can make use of the wide range of variables available on the birth certificates for cell definition. For example, Wave 1 nonresponse adjustments could make use of the following birth certificate data:

- Child's sex
- Mother's marital status and education
- Father's race, ethnicity, and education
- Previous live births
- Onset of prenatal care
- Medical risk factors
- Obstetric procedures, complications, and anomalies

These variables could be used, in addition to the data that define sampling strata, to define nonresponse adjustment cells.

Statistical procedures will be used to identify a subset of the above variables that divides the population into homogeneous classes with respect to response rates. In particular, the SPSS Chi-Squared Automatic Interaction Detector (CHAID) software may be used to create nonresponse adjustment cells that have different response rates.

Adjustments for later waves could use information from the parent and caregiver interviews and, if appropriate, the direct child assessments at earlier waves. For example, respondents to Wave 1 who are Wave 2 nonrespondents will have provided data such as household income, occupational status, and family structure that could be used in addition to the birth certificate data for later wave nonresponse adjustments.

B.1.4.3 Poststratification/Raking

Nonresponse adjustments will be followed by poststratification or raking, depending on the population control totals that are available and the number of respondents within each adjustment cell. Poststratification will be used if detailed data are available and the number of respondents per cell is large enough to control the variability in adjustment factors within analytic groups. Raking will be used if sufficiently detailed data are unavailable or if the variability in adjustment factors within analytic groups is a concern. Cell definitions will probably be based on variables like the three sampling domains (race/ethnicity, birth weight, and plurality) as well as other variables like Census region. Additional variables may be used if corresponding control totals are available from the vital statistics system.

B.1.4.4 Replicate Weights

Replicate weights will be calculated in order to facilitate variance estimation for ECLS-B estimates. Replicate variance estimation requires three steps: (1) forming the replicates, (2) constructing replicate weights, and (3) computing estimates of variance for survey statistics. The formation of replicates is straightforward, at least for a two-PSU per stratum designs like ECLS-B. The sample design assumed for the jackknife method is the same as that used for balanced repeated replication—two first-stage selections (PSUs) made with replacement in each of L strata. The primary difference between balanced repeated replication and jackknife is in the formation of replicates after the PSUs have been grouped into pairs. With jackknife, the first PSU is deleted from a single stratum to form the replicate, the weight of the other PSU in that stratum is multiplied by two, and the weights for the units in the remaining variance strata are not modified. The first and second PSUs within one stratum are usually determined at random. This process is repeated in turn for each stratum. If there are G strata, then G replicates will be created for use with jackknife. In PSUs selected with certainty, children will be grouped into pseudo-PSUs for variance estimates purposes.

After the replicates are formed, a replicate factor is constructed for each stratum. Let $f_{ijk}(r)$ denote the r-th replicate factor for the k-th respondent in the j-th PSU in the i-th stratum. In general, the factor can be expressed as

$$f_{ijk}(r)=\begin{cases}2 \text{ if } i=r \text{ and } j=1\\ 0 \text{ if } i=r \text{ and } j=2\\ 1 \text{ if } i\neq r\end{cases}.$$

The replicated base weight, $Wb_{ijk}(r)$, is then just the full-sample base weight multiplied by the replicate factor

$$Wb_{ijk}(r)=Wb_{ijk}f_{ijk}(r).$$

After obtaining the replicate base weights, all remaining full-sample weighting steps leading to the final weights are performed for each replicate. These include all nonresponse and poststratification adjustments. By repeating the various weight adjustment procedures on each set of replicate base weights, the impact of these procedures on the sampling variance of the estimate y' will be appropriately reflected in the variance estimate, $v(y')$.

B.1.4.5 Variance Estimation

With replicate weights computed, the jackknife method of variance estimation is readily applied for ECLS-B estimates. These methods can be used to estimate the variances of almost all statistics. We will describe the methods using the jackknife, but the same general comments also apply to the BRR method. Jackknifing estimates the sampling variability of a statistic y' as the sum of components of variability that may be attributed to individual pairs of first-stage sampling units (PSUs) in a stratum using an ultimate cluster formulation. This is the same basic approach as used in linearization, but the method of estimating the contribution of sampling within a stratum is different. In the jackknife, the variance attributed to sampling a particular pair of PSUs in a stratum is measured by estimating how much the value of the overall statistic would change if only one PSU in the pair had been sampled. When using replication techniques such as jackknifing to calculate standard errors, it is necessary to establish a

number of subsamples (or replicates) from the full sample, calculate the estimate from each subsample, and compute the variance estimate from the subsample and full-sample estimates.

After the replicate weights are constructed, the estimate of variance can easily be computed for any statistic using replication software such as WesVarPC, Westat's publicly distributed software for variance estimation using replication methods or the replication methods available in SUDAAN. This software works by computing the desired statistic once using the full-sample weight and an additional R times using each of the R sets of replicate weights. The variance estimate is the sum of the squared differences between the estimate derived using the full-sample weight and the estimates derived using each of the replicate weights. It can be written as

$$v(y') = \sum_{r=1}^{R} (y'_r - y')^2 ,$$

where

y'_r = the weighted estimate obtained using the r-th replicate weight; and

y' = the weighted estimate obtained using the full-sample weight.

WesVarPC computes the estimates and the variance estimates for tables and regression models using the full and replicate sample weights. The software also supports the estimation of relatively complex, nonlinear estimates defined by the survey analyst. The software is currently available as an add-on to the statistical analysis package SPSS.

The information necessary to calculate variances using a Taylor series linearization approximation will also be provided on the data files. The replication stratum and PSU information used above for calculating variance estimates via the replication technologies is all that is required for the Taylor series method.

B.2 Data Collection Procedures

This section describes the data collection procedures and methods that will be implemented for the first two waves of field test and the first two waves of the main study of ECLS-B. It discusses all

activities related to data collection for ECLS-B, including locating and securing cooperation, maximizing response rates, and testing procedures. Wave 1 of ECLS-B for the field test and the main study includes the 9-month parent interview, child assessment, the resident father interview; Wave 2 includes the 18-month parent interview, child assessment, and child care provider interview. Wave 1 of the field test will also include a nonresident father interview. Section B.2.2 contains a broad discussion of the nonresident father data collection plans for the field test.

B.2.1 Locating and Securing Respondent Cooperation

Securing the repeated cooperation of a panel of respondents is a major challenge for any large longitudinal survey. For ECLS-B, the challenge extends not only to securing and retaining the participation of the parents themselves but also to obtaining parental permission to measure and observe their young children, and in subsequent waves, to gain the cooperation of the children's child care providers.

The problems and difficulties in locating a child and its parents identified through birth records can increase significantly as time elapses from the date of birth. NCHS will draw the sample of births within the selected PSUs on a flow basis, as soon as the flow in each state begins. For example, for states that submit birth data within 3 months of the close of the birth month, NCHS will begin selecting the sample and passing information for the selected births on to Westat as soon as possible. Tracking the ECLS-B sample children will begin immediately after the sample is selected to reduce the elapsed time from the date of birth. An address confirmation card will be mailed to the address from the birth certificate, and postal service returns will be followed up quickly so that address information tracing will begin before the advance letter is mailed to the parents of the sampled children.

The following is a list of birth certificate data Westat will receive from NCHS that will be used to locate the sample children.

- Child's first, middle, and last name;
- Mother's first, middle, and last name;
- Mother's maiden or birth surname;
- Mother's residence, including street address, city, county, state, and ZIP code;

- Mother's mailing address, if different from the residence; and
- Father's first, middle, and last name.

Initial contact with the ECLS-B respondents will be in the form of a letter to the parent at the address provided by NCHS and confirmed by the post office. The letter will be mailed within 2 weeks of obtaining the sample information from NCHS. The letter will introduce the study, indicating its voluntary nature, and stating that a Westat representative will contact the parent soon.

When the interviewer establishes contact, she/he will follow established rules for determining who the best respondent or informant is for the parent interview. In most instances, the respondent will be the child's biological mother. If the child's biological mother is not living in the family household with the child, the child's biological father or legal guardian will be identified as the primary parent informant. In cases where an infant is adopted before enrollment in the study, the adoptive family rather than the biological family will be the informant for the ECLS-B parent instrument. The parent instruments will include one bath for nonbiological parents.

As part of the initial contact, the field interviewer will also determine whether the interview is best conducted in English, Spanish, or some other language. Interviewers will be trained to ask the respondents in the Hispanic and Asian samples which language the respondent prefers before the interview begins. The ECLS-B 9-month parent instrument, the instructions for the child assessments, the father questionnaire, the 18-month parent instrument, and the child care provider instrument will be translated into Spanish. The advance letter to parents of Hispanic children will be printed in both English and Spanish. In addition to translating the ECLS-B instruments into Spanish, some consideration has been given to developing a hard-copy translation guide in Chinese. A final decision on this will be based on an analysis of the expected sample yield by subgroup, projections of the number of linguistically isolated Chinese families and their geographic distribution in the ECLS-B PSUs. The interviewer or a translator will translate the interview into other languages as needed.

For all computer-assisted personal interviewing (CAPI) instruments, the instruments will be programmed in Spanish, and all bilingual interviewers will be able to switch to the Spanish version during the interview process. There is ongoing discussion about what additional ECLS-B materials will be translated and in what other languages. Westat and NCES are currently developing a proposed protocol for collecting data in minority language households. The minority language protocol will be implemented in the field test.

B.2.2 Securing State Cooperation

ECLS-B requires the use of birth records for sample selection and analytic purposes. NCHS plans to obtain permission from the state registrars to participate in the study and to obtain birth records from the states for the purposes of ECLS-B. NCES and Westat are working closely with NCHS on these procedures. NCHS staff will attend state registrar meetings, work with the state IRBs, and when necessary, visit states when a representative is required to obtain state clearance and cooperation. Westat will develop supporting materials to send to states explaining the ECLS-B study and its design, including responses to individual states' IRB requests for more information about the study.

B.2.3 The Wave 1 9-Month Parent Interview, Child Assessment, and Father Interview

The Wave 1 interview is critical to the success of ECLS-B. During the baseline data collection, interviewers will make a special effort to establish rapport with the parent. In most instances, the interviewer will make an in-person visit to the residence of the parent to conduct (or set an appointment for) the baseline interview. Westat's experience has been that advance telephone contacts for longitudinal study enrollment activities tend to give a potential respondent an easy opportunity to refuse, so the first contact will be made in person in order to bring the full range of interviewers' persuasive skills to bear. The advance letter and study brochure may not have totally prepared the parent for the full extent of the data collection. Interviewers will carry copies of the advance mailing materials to present to the parent. The interviewer will also present the parent with a small gift for the child and a modest cash incentive.

During the Wave 1 interview, interviewers will administer the 9-month parent instrument and the direct child assessment. The 9-month parent instrument will be a CAPI application. The parent will also be given the Woodcock-Johnson Psychoeducational Batteries Word Identification subtest. In addition to the 9-month parent CAPI application, a short self-administered form is planned for collecting sensitive items. The direct child assessments will include administering the Bayley Scales of Infant Development (BSID-II), videotaping the Nursing Child Assessment Teaching Scale (NCATS), and taking the child's physical measurements. The scores for the BSID-II and the physical measurements will be recorded on forms, and the interviewers will enter the BSID-II and the physical measurements into the

computer using a computer-assisted data entry (CADE) program before leaving the respondent's home. In addition to the 9-month parent CAPI application, a short self-administered form is planned for collecting sensitive items. The computer program can check for inconsistencies or missing items that the interviewer can obtain or correct before leaving the home. For the NCATS, Westat has recommended videotaping the teaching task in the home, to be coded later at a central site by trained NCATS coders, and the scores will then be entered at the home office. (A protocol for videotaping the NCATS is included in Appendix B.)

The self-administered 9-month father instrument will be given to the resident father for him to complete. If the resident father is not at home at the time of the interviewer's visit, the self-administered questionnaire will be left for the father to complete, along with a self-addressed postage-paid envelope in which to return the completed questionnaire. The interviewer's laptop will also include a distributed computer-assisted telephone interview (CATI) version of the father's instrument so that the interviewer can administer the father's instrument during a telephone interview or at the family's home, if necessary.

In cases where the child's biological father does not reside in the household, field test respondents will be asked permission to contact the nonresident fathers if the nonresident father has had contact with the child or the mother during the last 3 months. If the respondent gives permission to contact the nonresident father, the respondent will be asked to provide information, including the name, address, and telephone number, to assist in locating the nonresident biological father. After establishing contact with the nonresident father, either a 20- to 30-minute telephone instrument, similar in length and items to the resident father instrument, or a much shorter instrument (about 5-10 minutes) will be administered. The field test includes an experiment to evaluate the differences in interview length on respondent cooperation.

Interviewers will complete observation measures after leaving the family's home. The interviewer observations will include items from the Home Observation for Measurement of the Environment Short Form (HOME-SF) and the BSID-II Behavior Rating Scale (BRS). Interviewers will complete the HOME items and the BRS items in CAPI soon after leaving the child's home. (See the protocol for the 9- and 18-Month Interviewer Observations in Appendix C.)

Interviewers will transmit daily to send their completed cases to Westat and to receive any newly assigned cases and for rapid generation of the resident father and nonresident father sample.

Reports will be generated weekly on field production, response rates, and costs. Data on father questionnaire receipts will be transmitted to interviewers each time they call in to the home office.

B.2.4 Nonresident Father Interview

A decision was recently made to evaluate the feasibility of collecting data from nonresident fathers during the 9-month data collection period in the field test. The nonresident father questionnaire was adapted from the resident father questionnaire. The primary modes of data collection for the nonresident fathers will be telephone and in-person, with the majority (75 to 80 percent) to be conducted on the telephone. We expect a number of nonresident father questionnaires will be completed in person because the father has no telephone, we are unable to obtain the telephone number, or the father does not respond to the telephone. A self-administered instrument will also be developed to leave with the mother for cases when the mother expects to see the father in the next few days.

Previous studies of nonresident fathers have indicated that they are very difficult to locate and interview. For the purposes of the field test, the definition of a nonresident father will be a biological father who does not live with the child, who has had some recent contact with the mother or the child and whom the mother is willing to identify. For the field test, information collected in the 9-month parent will be used to determine whether to seek the respondent's permission to contact the nonresident fathers. Respondents will be asked to permission to contact the nonresident father under the following circumstances:

1. The nonresident father has seen the child in the last month; or

2. The nonresident father has had at least 7 days of contact with the child within the last 3 months; or

3. The nonresident father has been in touch with the mother/guardian by telephone, letter, or other means at least once a month in the last 3 months.

If the nonresident father has not seen the child in more than a month and the mother/guardian reports that she/he does not want the father to see the child, we will not ask the mother/guardian for permission to contact the father.

The field test sample for Wave 1 was expanded from 800 to 1,500 in order to identify a sufficient number of nonresident fathers. Since the rate of nonresident fathers is much higher among blacks, we plan to sample black births disproportionately in the field test supplemental sample of 700. This would be expected to yield a sample of about 170 additional nonresident fathers, or a total of about 230 overall.

The field test provides an opportunity to develop and evaluate special protocols needed to locate and collect data from nonresident fathers, based on the quality of the locating information obtained from the mother and results of the first contact attempts. Refusal letters will be developed for different types of reluctant respondents with refusal conversion specialists assigned to contact the refusals.

Eligible nonresident fathers will be randomly assigned to one of two treatments. For the first group, we will attempt to complete a 20- to 30-minute telephone questionnaire, which is similar in length and items to the questionnaire for resident fathers. For the second group, we will develop a much shorter instrument, consisting of a subset of items in the questionnaire administered to the first group. The concept of a very short questionnaire for nonresident fathers was suggested in the December 1998 technical review panel (TRP) meeting. Westat believes it would be easier to achieve the targeted response rate (70% in the field test) with a very short instrument, but we believe it would be difficult to accept the loss of much of the data in the father questionnaire, without strong evidence of the lack of viable alternatives.

The field test results on collecting data from nonresident fathers will be analyzed to prepare a recommendation for NCES regarding the feasibility of collecting data from nonresident fathers in the national study. The nonresident father evaluation will include locating and contacting procedures for the nonresident fathers, the mode of data collection, and differences in the response rates for the two instrument groups. Part of the evaluation would include a comparison of the characteristics of the children of responding and nonresponding nonresident fathers. If the field test results indicate that data collection from nonresident fathers is feasible and if sufficient funding is available, then a separate OMB package will be prepared requesting clearance for the 9-month nonresident father data collection for the national study.

B.2.5 The Wave 2 18-Month Parent Interview and Child Assessment

During the Wave 2 interview, interviewers will administer the 18-month parent instrument and the direct child assessments. The 18-month parent instrument (like the 9-month parent instrument) will be a CAPI application. The 18-month parent instrument will include questions about the child's nonparental care provider, including the child care provider's name, address, and phone number, which will be used to generate the sample of child care providers. Parents will also be asked to sign a permission form for contacting the child care providers.

As in the Wave 1 interviews, the direct child assessments will include administering the BSID-II, videotaping the NCATS, and taking the physical measurements of the child. The scores for the BSID-II and the physical measurements will be recorded on forms, and the interviewer will record the BSID-II scores and the physical measurements into the computer before leaving the respondent's home. The NCATS videotape will be scored at a later time by certified NCATS coders, and the scores will be entered at the home office. The current plan for the Wave 2 interviews is to also use an Attachment Q-sort procedure to assess the child's attachment to the parent. Two Q-sorts would be conducted: one completed by the parent during the home visit with assistance from the interviewer, and one completed by the interviewer following the home visit. The parent would be sent a package in advance of the home visit with instructions for becoming familiar with the Q-sort items, but they would not be asked to complete the sort task prior to the home visit. (Appendix B contains a detailed description of the Q-sort and the protocol for the Q-sort.)

As in Wave 1, the interviewer, after leaving the family's home, will record his/her observations on the home environment and assessment of the child's behavior during the administration of the BSID-II in CAPI. The interviewer observations will include items from the HOME-SF and the BRS. Interviewers will transmit daily to send their completed cases to Westat, to receive any newly assigned cases, and for rapid generation of the child care provider sample.

B.2.6 Wave 2 18-Month Child Care Provider Interview

During the Wave 2 parent interview, the parent will be asked to sign a permission form addressed to the child care provider, giving permission for the child care provider to participate in the study. The field interviewer will mail an advance letter and the permission form along with the study

brochure to the child care provider. The interviewer will contact the child care provider by telephone and explain that the child and the child's parent(s) are participating in ECLS-B. For children in center-based child care, the center director will be contacted. After collecting information about the center, the interviewer will ask the center director for permission to interview the person at the center who is the child's primary caregiver.

The data collected from the child care providers benefit ECLS-B in two important ways: (1) the data provide additional sources of information with which to compare parent's responses concerning the programs their children attend, and (2) the data collect program information and background information about the child care provider that the parents cannot reliably provide.

The child care providers will be contacted within 2 weeks of the completion of the 18-month parent interview. More than one-half of the children are expected to have some sort of regular nonparental care by 18 months, so we expect about 6,000 child care providers to be identified and eligible for contacting in the main study. A high rate of cooperation is anticipated for these cases (approximately 80%) because the child's family is already participating and the burden of a 30-minute interview on the provider is minimal. The recency of the information supplied by the parents about the child's child care providers should contribute to a high response rate. The main response rate concern in other studies of child care providers has been with unlicensed, family care providers. Westat will seek to address this concern by reaching the provider as quickly as possible after the parent interview and enlisting the parent's active assistance in presenting the study.

B.3 Methods for Maximizing Response Rates

The factors that influence the overall interview completion rate can be divided into five broad categories:

- **Interviewer's Ability to Obtain Cooperation.** Westat's interviewer training emphasizes obtaining cooperation as well as administering the questionnaires and the child assessments. Interviewers will be provided with a series of thoughtfully designed printed items that present critical information about the study. These materials will include a copy of the advance letter signed by a representative of NCES that describes the study in a general way and a brochure that provides additional information about the study including an 800 number for respondents to call who are concerned about the legitimacy of the survey.

- **Flexibility in Scheduling Interviews.** Much of the time, the interview will be conducted on the first visit or an appointment will be made to return at a more convenient time. Interviewers will be trained to be flexible in their administration of both the interview and the direct child assessments. The interview will be instructed to ask the parent on arrival what the child's nap schedule is and when the child was last fed. Depending on how quickly the child warms up to the interviewer and the child's current state (e.g., not sleepy or cranky) the direct assessment can be done before the parent interview or after the parent interview. Additionally, the parent interview can be interrupted at any point and attention shifted to the direct assessment, and vice versa. For the child care provider interviews, interviews will be scheduled when they are most convenient for the child care providers.

- **Refusal Conversation Procedures.** Another technique that Westat will use to bolster the response rate will be to institute a training segment on refusal prevention and conversion during the course of interviewer training. This session will be conducted by a highly experienced refusal conversion supervisor who will guide the interviewers on ways to avoid refusals and respondent breakoffs. Westat will also assign refusal conversion experts who will recontact particularly difficult respondents.

- **Followup Materials.** Followup materials will include mailing a birthday card to the sample members (after the first interview is conducted) and to mail a respondent newsletter to the entire sample at the midpoint between the 9-month and 18-month interviews. The goal of the followup materials will be to encourage participation by giving the respondents some early results of the study. Care will be taken to ensure the newsletter does not include data items that might bias subsequent answers or behavior. The newsletter will express appreciation for past participation and reinforce the importance of continuing support for the study and will include demographic items and information about the operational aspects of the study.

- **Monetary Incentives.** Monetary incentives to the ECLS-B respondents are planned to secure cooperation, to convey a sense of the importance of the study, and to reinforce the notion that the study recognizes the importance of the respondent's contribution. Incentives also provide a useful additional "tool" for the interviewer to use at decisive points in attempting to gain cooperation. As currently planned, the respondent will be paid $20 upon completion of the parent interview. The resident father will be paid $15, and the child care provider will be paid $20. There are several incentive experiments planned for the field test as outlined in part A.10. Payments to Respondents. Monetary incentives are justified in ECLS-B by the unusual burden the longitudinal study places on parents and children, and by the direct child assessment activities, which are considerably beyond the scope of most survey activities.

At least once each week, the sample management system will produce computer-generated reports based on the field transmitted disposition codes, including the number of cases pending, completed, and noninterview reason for each sample type (e.g., child, parent, father, and child care provider). These reports will assist the field supervisors and home office project staff in monitoring the progress of the field work.

B.4 Test of Procedures and Methods

This section discusses the cognitive laboratory research conducted for the first two waves of ECLS-B, the longitudinal field test planned for ECLS-B, and the evaluation activities planned for the field test.

B.4.1 Cognitive Testing Activities

The cognitive testing or initial pretesting activities for the ECLS-B instruments and protocols were designed for ECLS-B with the following objectives:

- To detect cognitive sources of response error and explore other potential sources of response bias in new or modified survey items that were proposed for the different ECLS-B instruments;
- To explore various issues with respect to the home visit, including the ordering of instruments, the feasibility of administering developmental items in the direct child assessments, the perceived intrusiveness of various aspects of the home visit, and the participants responses to respondent incentives.

Five phases of initial pretesting activities for the ECLS-B instruments and protocols were conducted during the late summer and early fall of 1998. Each phase highlighted specific instruments or selected items within an instrument and each phase involved different samples of nine respondents. In general, only subsets of items from each instrument were selected for the initial pretesting activities due to time and burden constraints. Items chosen were those items that were not previously included in large national surveys or that were modified for ECLS-B. During the pretesting work, information obtained from earlier phases was used to make revisions to instruments and items used in later phases. Phases 1-3 (the 6-,12-, and 18-month parent and child instruments) and Phase 5 (the 6-month father self-administered questionnaires) were conducted between July 28 and September 15, 1998, and a report covering the pretesting and cognitive testing activities for Phases 1-3 and Phase 5 was submitted to NCES in October. The Phase 4 interviews (child care provider instrument) were conducted in late October 1998 and a report submitted to NCES in early November 1998.

Almost all of the mothers who participated in Phases 1, 2, and 3 of the cognitive testing were Washington, DC, metropolitan area mothers recruited from a list purchased from a marketing firm. The specifications provided for the list for Phases 1 and 3 were for mothers of children born in January and

February 1998 in the Washington, DC, metropolitan area, with a household income of $65,000 or less. For Phase 2, the date of birth specified were January, February, June, and July 1997. Two of the mothers for the Phase 2 and Phase 3 interviewers were Westat employees with children in the specified age ranges and one was a relative of a Westat employee. The fathers recruited for Phase 5 of the cognitive interviews were either the spouses or the partners of mothers who participated in Phases 1, 2, or 3.

Westat project staff conducted all of the interviews. A local focus group facility recruited the participants for the Phase 1 interviews, and the interviews were conducted at the focus group facility. Westat project staff recruited the participants for all of the other phases of the testing. The majority of the Phase 2 and Phase 3 interviews were conducted in the respondents' homes, and the remainder were conducted at Westat. All but one of the Phase 5 interviews took place at Westat, and one was conducted at the respondent's home.

Participants were specifically recruited to cover a wide diversity of cultural and social class backgrounds. Across the entire pretesting and cognitive testing sample; there were individuals from black, Hispanic, and Asian cultures; there were individuals for whom English was a second language; and there were families who were at or below the poverty line, as well as families from working class and middle-income categories.

During the initial pretesting and cognitive testing period, a major change in the design of the administration periods for the study occurred. (See broader discussion of the reasons for the design changes in Section B.1 and Appendix I.) Instead of the original 6-month in-person home visit followed by 12- and 18-month telephone interviews, the administration periods were changed to two in-person home visits, at 9- and 18-months respectively, with the father instrument administered at the 9-month home visit and the child care provider interviews to follow the 18-month interview. Because the instrument used in the initial pretesting activities were already developed according to the original design, the testing continued using families of 6-, 12-, and 18-month-olds. There was time, however, to modify the procedure for Phase 2 to allow for some testing of the new design. Home visits rather than laboratory-based interviews were done for most of the 12- and 18-month instruments. Further, in almost all Phase 2 interviews, whether at the home or at Westat, the BSID-II was administered to the children, in order to see how it would work with children closer in age to those who would be in the full study sample.

Phase 1 consisted of cognitive interviews with 9 mothers of infants approximately 6 months old. These interviews were conducted on July 28 in a laboratory setting. The focus of Phase 1 was

largely on testing the new or modified items developed in the 6-month parent interview and child instrument (parent self-report). In households with resident fathers, the mothers who participated in this phase were asked if these fathers would be willing to be interviewed separately (for Phase 5).

Phase 2 involved both cognitive testing and informal dress rehearsals of the 12- and 18-month parent and child instruments and took place from August 11 to August 28. The BSID-II was administered to the children, and mothers were given portions of the parent interview and the full child instruments. These parents were also asked to provide contact information (and consents to contact) for their child care providers, some of whom were included in the Phase 4 interviews.

Phase 3 of the pretest ran concurrently with the second phase of the cognitive testing, from August 11 to August 28, and involved home visits to mothers with 6-month old infants. These visits provided an informal "dress rehearsal" for the direct infant assessments using the BSID-II, while mothers were administered the full drafts of the 6-month parent and child instruments. Two sets of nine households each were involved in the home visits. In the second set of households, the infant physical measures (length and weight) were administered, and the Word Identification subtest of the Woodcock-Johnson Achievement Tests was administered. Timings for each component of the home visits were recorded for most of these home visits.

Mothers who participated in any of the first three phases were asked for their consent to contact their current child care provider if their child was in a child care arrangement. Phase 4 cognitive testing consisted of telephone interviews with child chare providers to test the child care provider instrument. Many of the mothers in the first three phases of the testing did not have child care providers, and the sample of child care providers for Phase 4 was drawn largely from providers recruited from local area child care registries and from other parent networks.

The Phase 4 cognitive testing consisted of telephone interviews with four different types of child care providers—center-based, family, in-home, and relative care providers. Cognitive interviews were conducted with a total of 23 child care providers, consisting of 5 center-based care providers, 8 family child care providers, 4 relative child care providers, and 5 in-home child care providers during the week of October 26. Child care providers were recruited from several states, including Maryland, Virginia, DC, Ohio, and Georgia. When the interviews were scheduled, the center-base care providers and the family child care providers were asked to select a child in the appropriate age range (18 to 20 months old) for the interviewer and the respondent to talk about. The provider was asked not to share any

identifying information about the child to guard confidentiality. The in-home and relative child care respondents participated using the actual child they cared for who was closest to 18-months of age.

The findings from the initial pretesting and cognitive testing activities were contained in the reports submitted to NCES. The survey instruments were revised based on these findings. Overall, the testing activities were successful in identifying areas of the various instruments that worked well and areas that were problematic. In addition, these activities helped to identify specific interviewer training issues, logistical issues, and respondent concerns. Assessing children in both Phase 2 and Phase 3 provided interviewers with many opportunities to administer the BSID-II in a variety of settings, to a variety of children at different ages and stages of development and with different temperaments. These experiences helped to produce a set of interviewing training tips to help the field staff successfully conduct the direct child assessments. The major types of instrument changes that resulted from the initial pretesting activities were as follows:

- The wording of some of the items was changed to improve their clarity. This resulted in better respondent comprehension;
- Items were moved within the instruments to improve interview flow and to assist respondent comprehension;
- Items were deleted from the instruments because they posed significant response problems for the respondents; and
- Some items were added to improve the information collected and to improve interview flow.

B.4.2 Field Test for ECLS-B

A full-scale longitudinal field test is planned for ECLS-B in 1999 and 2000 in 10 PSUs in 8 states. The primary purposes of the field test are to (1) provide a test of the sampling procedures; (2) revise and test questionnaire content; (3) test child direct assessment procedures; (4) test CAPI applications; (5) test data collection procedures; and (6) test data processing procedures related to CAPI and hard-copy data collection.

The ECLS-B field test sample will be drawn from registered births in the NCHS National Statistics System; NCHS receives birth records from the state vital statistic departments. The registered births will be sampled for a set of 10 PSUs in order to control travel costs in fielding the survey. This

design will provide a realistic sense of the scope and diversity of the sample selection effort, providing both locating and data collection experiences with a range of children and families in various socioeconomic groups, serving as a source for a child care provider sample for the 18-month interview. The sample size will be sufficient to test a full set of survey items and assessment procedures for sensitivity and appropriateness with a number of groups (e.g., those with low education or literacy levels, with twins and low birthweight infants, with Spanish speakers, and with blacks and Asian Americans, as well as with whites). We expect to achieve adequate representation of all of these groups in the initial field test sample and we plan to follow all groups through all waves. The ECLS-B field test will require a fairly large total sample size to adequately test the study design and allow for adequate sample size for later waves of the longitudinal field test.

The field test data collection procedures largely mirror those planned for the main study. The data collection plan for the main study calls for two rounds of data collection to be implemented in the current Westat contract, a baseline interview at 9 months, and a followup interview at 18 months. Both the 9- and 18-month parent interviews and direct child assessments will be conducted in-person. The 9-month resident father instrument will be self-administered with telephone followup and in-person followup, as needed. An experiment is proposed for the nonresident father data collection, to examine issues of instrument length and burden. A short (5-10 minutes) and a long (20-minutes) instrument will be administered by telephone, with in-person followup. A self-administered version is planned to leave with the mother if she expects to see the father shortly after the 9-month home visit. The 18-month child care provider instrument will be conducted by telephone.

Figure B2.1 presents the schedule for the major Wave 1 field test activities, from sample selection through delivery of a final report summarizing the main field test findings, and a set of recommendations for instrument design changes.

		Start	End
1.	Select field test sites		1/15/99
2.	OMB draft clearance package delivered		1/15/99
3a.	Letter to registrars		1/22/99
3b.	Followup prompts to registrars	2/8/99	3/31/99
3c.	Drop dead date for implementing backup plan		4/15/99
4.	Programming instructions to states		2/15/99
5.	Specifications for sample selection algorithm	1/15/99	2/15/99
6.	Programming sample selection algorithm	2/15/99	3/15/99
7.	Sample flows to NCHS	3/8/99	8/1/99
8.	Sample identification back to states	5/15/99	8/8/99
9.	Sample flows to Westat	6/1/99	10/1/99
10.	CAPI specifications development	1/15/99	4/15/99
11.	CAPI programming and testing	4/1/99	8/1/99
12.	Delivery of CAPI screens in English and Spanish		7/28/99
13.	Availability of CAPI instruments to NCES		8/25/99
14.	Translation activities	2/1/99	4/15/99
15.	Revised brochure developed	3/15/99	4/15/99
16.	Letters to parents	6/15/99	10/15/99
17.	Tracing activities	6/15/99	11/30/99
18.	Field supervisor assignment		7/1/99
19.	Field interviewer recruitment	7/1/99	9/1/99
20.	Interviewer training	9/9/99	9/16/99
21.	Data collection, Wave 1	9/17/99	1/31/00
22.	Sign off on overall 9-month study design		10/15/99
23.	Summary of field test		3/21/00
24.	Memo with design/instrument changes		3/21/00
25.	Wave 2 addendum to field test plan		12/15/99

Figure B2.1. ECLS-B field test schedule

B.4.2.1 Sample Selection

The sample for the field test is designed with several goals in mind. It should give a realistic assessment of the level of effort that will be required when we identify the sample for the main study. It should allow us to determine the feasibility of the sampling approach in relation to the overall design, especially with respect to sample flows in states and months that are thought to be particularly problematic. The PSUs should provide as much diversity in sampling situations as the overall task will support. The sample must include reasonable representations of the populations to be oversampled in the main study to provide experience in locating study subjects, as well as in the interviewing tasks. If

possible, the field test sample should also provide opportunity for project and client staff to observe field test interviews.

For the ECLS-B field test, the selected 10 PSUs in eight states, and the field test PSUs will be a subset of the national ECLS-B PSUs in order to build a core field staff with some experience who can continue onto the national study. Westat has proposed a sample size of 1,500 children born in January, February, and March 1999. This sample size should be sufficient to study a number of instrument issues, even during the later waves of the longitudinal field test.

B.4.2.2 Selection of Field Test Sites and Sample Workflow Issues

One of the main goals for the field test is to test the sample selection procedures and to evaluate the adequacy of the flow of birth certificate information from the states into the NCHS system for selecting the ECLS-B sample in a timely way. In September 1998, Westat received birth certificate flow data from NCHS and conducted analyses of state-specific cumulative flows, by month of birth, based on 1997 returns. These analyses looked at states with less than 95 percent reporting levels within 6 months after the birth month and identified 18 states with particular problems. These states fell into four groups, based on the reporting patterns:

- Eight states (including California and New York) exhibited problems only with births in the first 2 months of 1997.
- Four states were problematic only in 1, 2, or 3 summer months.
- Four other states (including Pennsylvania) reported less than 95 percent of the births in 4 or more months, spread throughout the year.
- Two states (Indiana and Ohio) experienced more severe problems, with low reporting at the 6-month point for almost all months in 1997.

This analysis is being repeated for 1998 data. Westat recommended that Indiana and Ohio be included in the field test sample. If states in the first and third groups show continued problems in 1998, Westat recommended that most of the rest of the field test sites be selected in five of those states.

Other secondary criteria for field test site selection include cooperation propensity of the state registrar; proximity to Washington, DC, (for at least one of the sites); and population diversity. (At

least some sites should include high proportions of black, Hispanic, and Asian births.) NCHS and Westat worked closely together in January and February 1999 to select the 10 sites.

The 10 sites selected for the field test are:

1.	Washington, DC (subset of MSA)	Virginia
2.	Charlottesville and neighboring counties	Virginia
3.	Columbus	Ohio
4.	Minneapolis (subset of MSA)	Minnesota
5.	Phoenix	Arizona
6.	Westchester and neighboring counties (subset of New York City MSA)	New York
7.	Charleston	South Carolina
8	Albuquerque	New Mexico
9.	Georgetown and neighboring counties	South Carolina
10.	Rochester	New York

B.4.2.3 Securing State Registrar Cooperation

NCHS is leading the process of securing cooperation from the state registrars. A preliminary presentation was made to two members of the board of the registrar's association in March 1998. This led to a questionnaire that was mailed to all registrars, asking about procedures the states would prefer to follow in selecting the ECLS-B sample and seeking information about any concerns the states might have in the proposed approach. One state (Illinois) reported a serious concern. NCHS conferred with that state's registrar to overcome the problem; apparently, a successful solution was reached. NCHS drafted a statement of the protocol for formal presentation to the board of the registrar's association in December. The board of registrar's approved the protocol in December and endorsed the study. In February, NCHS drafted a letter to the selected states describing the ECLS-B study and requesting their participation.

The basic protocol calls for the field test states to send addresses for all births occurring within the selected site(s) in the state during January, February, and March 1999 to NCHS within 6 months of the birth month, on a monthly basis. NCHS would select the sample and send the list of selected births back to the registrar. The registrar would check the sample for infant deaths and any other eligibility exclusions and send the list of exclusions to NCHS.

Some states will respond affirmatively during the first few weeks after the protocol is mailed, including some of the field test states. States that do not respond at all will be prompted by NCHS staff. Concerns raised by states that respond provisionally will be addressed. Some states may require their own IRB process; Westat will prepare any materials required by the state IRBs. Field test states that do not respond affirmatively to the letter and protocol within the first few weeks will be assigned a high priority for followup activities by NCHS.

These same procedures were followed by NCHS for the National Maternal and Infant Health Survey several years ago, with virtually 100 percent success. By allowing ample time to address registrar concerns, we expect to achieve similar results. For the field test (which has a foreshortened preparation period), we may choose to substitute some sites for others if we encounter difficulties in response to the initial request in some of the field test states, but NCHS would continue to work on the cooperation problems for the main study.

B.4.2.4 Sample Selection Algorithm

Westat will develop the specifications for the sample selection algorithm, and NCHS staff will program and test the selection routines. The basic sample for the field test will be designed to include approximately equal numbers of Asian, Hispanic, and white births, and larger numbers of black births. The number sampled per PSU will be approximately 150. In these respects, the algorithm for the field test differs markedly from the algorithm for the main study. The field test sample is more concentrated in time and has a higher proportion of minorities.

B.4.2.5 Sample Yield

We expect to achieve a response rate of 80 percent for the parent interviews in Wave 1 of the field test, yielding 1,200 completed cases. The distribution for the field test sample is expected to be as follows:

	Completed Parent Interviews, Wave 1
White	220
Hispanic	220
Asian	220
Black	540
Total	1,200

About 620 of the 1,200 families are expected to have resident fathers. We expect to achieve an 80 percent response rate, yielding about 500 completed resident father questionnaires.[2] We expect the total enhanced sample would identify about 300 nonresident fathers with recent contact. We assume a 70 percent response rate with these fathers, for about 210 completed interviews.

For the 18-month parent interview, we expect to complete 90 percent of the Wave 1 responders, for a total of 1,080. About 50 percent of these parents' children will be in some nonparental child care arrangement; we assume 85 percent of the parents will grant permission to contact the provider, and 80 percent of the providers will agree to be interviewed, for a total of about 370 provider completes.

B.4.2.6 Field Staff Recruitment and Training

Westat plans to assign two field supervisors to the field test by June 1999. The field test supervisors will be drawn from Westat's pool of experienced management staff. In selecting the supervisory staff for ECLS-B, primary consideration will be given to experience on similar studies. Supervisors will recruit one or two interviewers in each PSU (depending on anticipated workload size). Recruiting activities will take place in July and August 1999.

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[2] The denominator in the response rate for the resident father questionnaire equals the number of resident fathers identified in completed parent interviews.

First consideration will go to experienced Westat interviewers who have been successful on similar work, including the ECLS-K assessments and contacts with parents. Preference will go to interviewers who have experience working with children and conducting CAPI interviews in households. In areas where no experienced interviewers who meet these criteria are available, we will seek to hire individuals who have some experience working with children, who are outgoing, and who can follow direction well.

The early parts of the classroom training will emphasize the development of CAPI skills and will build a sense of the whole data collection task. By the end of the third day, interviewers will have been exposed to all aspects of the task, and the remainder of the training will build skills in handling situations that are more complex. We will consider bringing infants and mothers into the classroom on the next-to-last day, to give the interviewers some "live" exposure to the task. This technique was used in the initial ECLS-K training to good effect, and Westat has used it successfully on several other studies.

B.4.2.7 In-home Data Collection for Waves 1 and 2

The field test provides an opportunity to evaluate, under field conditions, the various CAPI instruments designed for data collection and the protocols for the direct child assessments. The Wave 1 data collection will include the administration of 9-month parent instrument and the 9-month direct child assessments in the child's home. The 9-month resident father instrument will be self-administered. Data will be collected from nonresident fathers primarily by phone, with in- person followup as needed. A self-administered nonresident father instrument is planned for cases where the mother expects to see the father in the next few days after the 9-month home visit. During the Wave 2 interview, the 18-month parent instrument and the 18-month direct child assessments will be administered. During the 18-month parent interview, the parents will be asked to give permission to contract the child care provider for the child, if any. The parent instrument will include questions about the name, address, and telephone number of the child care provider for the child, generating a sample of child care providers.

Response rates will also be evaluated on the field test. The response rates targeted for the main study are ambitious but reasonable given recent experience at Westat and other organizations on national longitudinal studies. The following response rate assumptions have been made for the field test:

		Field test response rates assumptions
1.	Wave 1 Parent Interview	80%
2.	Resident Father Questionnaire	80%
3.	Nonresident Father Questionnaire	70%
4.	Wave 2 Parent Interview	90%
5.	Child Care Provider Interview	80%

These response rates are somewhat lower than the goals for the national study. More time and resources will be available on the national study to build response rates, plus the national study will have the opportunity to improve upon the field test experience.

A set of critical items will be identified for the parent instruments, the father instruments, and the child care provider instruments to define "completes" in the numerator for the response rate calculation. The critical items proposed for the different instruments are outlined below in Table B2-1.

Table B2-1. Critical items for ECLS-B instruments

Critical item	9-month parent	18-month parent	Resident father	Nonresident father	Child care provider
Highest grade completed	✓	✓	✓	✓	✓
Marital status	✓	✓		✓	
Whether or not a partner or spouse lives in the household	✓	✓			
Whether or not the biological father is living	✓				
Current child care arrangements	✓	✓			
General health	✓	✓	✓	✓	✓
Health insurance coverage	✓	✓			
Current employment status	✓	✓	✓	✓	
Occupation and industry	✓	✓	✓	✓	
Number of hours worked per week	✓	✓	✓	✓	
Salary	✓	✓	✓	✓	
Household income level	✓	✓		✓	✓
Date of birth	✓		✓	✓	✓
Sex	✓	✓	✓	✓	✓
Race/ethnicity	✓	✓	✓	✓	✓
Number of biological children	✓	✓	✓	✓	
Length of time caring for child					✓
Number of hours care for child					✓
Number of children cared for					✓
Length of time providing child care					✓

B.4.2.8 Field Test Evaluation Process

The overall objective of the field test is to identify refinements to survey instruments and procedures that reduce burden and improve the accuracy and completeness of reported information. The specific goals of the field test and the evaluation methods for the field test outcomes will focus on five issues: (1) sample design, (2) instrument content, (3) CAPI, (4) data collection, and (5) data processing.

The field test evaluation will focus on both substantive issues in the approach taken for the instruments (e.g., is the data collected meeting the analytic goals as specified by NCES), as well as operational issues (e.g., the level of respondent burden, the completeness of the data, the usability of the CAPI application). Table B2-2 lists the field test evaluation methods.

Sample Design Issues. The primary sample design issues to be evaluated in the field test are the feasibility of the birth certificate flow for supporting the overall study design and the comparison of actual versus expected sample yields. If all field test states are able to transmit 95 percent or more of their January through March 1999 births in the field test sites with addresses to NCHS within 6 months of each birth month, clearly the current design would be judged feasible. This level of success is not expected, however, given that we plan to concentrate on some of the most problematic states in the field test. We hope to see some improvement over the 1997 and 1998 flow. The evaluation of the sample design for the field test will consider how much improvement is sufficient to judge if the overall design feasible for 2000 in all states.

There are a number of reasons why the actual sample yield might differ from the expected yield. Birth rates and mortality rates may change from year to year; errors may be introduced into the selection process; there are slight seasonal effects in birth rates; etc. Analyses by state and PSU, by birth month, and by ethnic group will compare expected and actual sample yield to identify significant discrepancies.

The field test will be used to refine the sample selection algorithm. If any sampling related errors are discovered, we will take steps to eliminate them for the national study. If estimates for birth and mortality rates differ from the actual rates, Westat and NCHS staff will work on ways to improve the estimates for the national study.

Table B2-2. Field pretest evaluation methods

The following list describes the number of different methods to evaluate the field test results.
1. Trainer/supervisor evaluations of interviewers in training, the training materials, and the approaches used for the training.
2. Computer-assisted personal interviewing (CAPI) hot line: A toll-free number for interviewers to call with hardware or software problems. All such calls would be documented by the receiver, along with the advice for dealing with the problem.
3. Interviewer questionnaires administered before training and after each wave of data collection.
4. Interviewer Remarks Questionnaire: Captures case-by-case experiences from the interviewer.
5. Interviewer Diary: A way to have interviewers informally record experiences about the data collection process and interactions with the parents and children while the experience is fresh.
6. In-person observations of the interviewer.
7. Review of the videotapes used for the Nursing Child Assessment Satellite Training and Q-Sort tasks.
8. Review of Q-Sort tasks.
9. Tape recordings of some of the parent interviews and the child care provider interviews.
10. Record of Calls: Detailed documentation of contacting, locating, and tracking efforts.
11. Documentation of data transmission problems by receiving staff.
12. Problem sheets from data editing.
13. Review of respondent debriefing questions.
14. Interviewer debriefing: Formal gathering of interviewers and supervisors after the completion of each field test wave.
15. CAPI "time stamp" at many places during the interview, allowing accurate estimates of administration times for different sections, as well as the interview as a whole.
16. CAPI "date stamp" provides data on the day of the interview.
17. Review of comments, the "marginal notes" entered into CAPI by interviewers during interviews.
18. Item nonresponse rates by questionnaire item.
19. Response rates for parent, child assessments, father instruments, and child care provider instruments; field production and cost reports.
20. Incentive payments for parent, father, and child care provider instruments.
21. Supervisor problem logs that detail problem cases.
22. Detail in interim and final nonresponse from Non-Interview Report Forms.
23. Item frequencies and cross-tabulations.
24. Debriefing of data preparation and programming staff.
25. Comparison of parent data with father and child care provider data.
26. Postdata collection review of a sample of cases.
27. Audit trails of interviewer keystrokes in CAPI sessions.

Instrument Content Issues. Evaluating the instrument content will focus on whether the data collected are meeting the analytic goals, as well as the operational issues associated with specific instruments. Some of the specific parts of the instruments to be included in the evaluation will include distributions across the various assessment items, including the reliability and validity for the Center for Epidemiologic Studies-Depression Scale (CES-D), the BSID-II scores, and the Woodcock-Johnson Word Identification Test subscale.

The BSID-II, Nursing Child Assessment Satellite Training (NCAST), and the home items all have national norms. To the extent possible, the scores from these scales will be analyzed and compared to the national norms for the different racial/ethnic groups. Overall, a set of analyses will be done on the field test scale data to confirm the following: (1) internal consistency of the scales (Alpha reliability); (2) concurrent validity (that measures known to correlate from previous studies actually do correlate); and (3) construct validity (that measures from different constructs known to correlate actually do). Some exploratory analyses will also be done for selected data items to determine if there were few missing data and refusals, as well as sufficient variability in responses across respondents. After the 18-month data are collected, additional exploratory analyses will be done to test the validity and reliability of the data to determine, for example, if children of different ages show a progression in their abilities.

The specific content issues to be evaluated are the following:

- How well the individual instruments as a whole and specific items or scales worked for the different for different cultural groups (e.g., Hispanic, black, Asian/Pacific Islanders), different family structures (e.g., single-parent households, households with more than one child under age 12), and different socioeconomic backgrounds (e.g., number of households in poverty).
- How well the measures selected for the various instruments provided reliable and valid information.
- Whether there are any problems with specific instruments or items that affected respondent burden or reactivity (e.g., Woodcock-Johnson Word Identification Test).

The operational issues to be evaluated are the following:

- How long does it take to administer each section of the instruments?
- What level of edits can effectively be built into the CAPI application?
- How will did the path identified for nonbiological parents work?

Instrument content issues will be evaluated using data from the instruments and assessments, the Interviewer Remarks Questionnaire (IRQ) and diaries, in-person observations and tape recordings, item nonresponse, CAPI timestamps, and review of comments recorded in CAPI, as well as the interviewer debriefing.

Direct Assessments. Evaluating the direct child assessments will focus on whether the data collected are meeting the analytic goals, as well as the operational issues associated with child assessments. The specific issues to be evaluated are the following:

- How do the assessments operate under field conditions?
- Do the direct assessments pose an overly high response burden to the children and parents?
- How long does it take to administer the direct child assessments?
- Is there enough variation in the scores for the particular assessment tasks?
- How do the child assessments compare with standardized samples and norms?

Direct child assessment issues will be evaluated using data from the IRQ and diaries, in-person observations, videotape recordings, item nonresponse, analysis of the assessment data, CAPI timestamps, and review of comments recorded in CAPI, as well as the interviewer debriefing.

CAPI Issues. The many CAPI issues may be subdivided into four potential problem sources—interviewer, respondent, software, and hardware. Many involve all four, however. For example, if the machine response time is longer than acceptable, it may be attributed to hardware, software, or both, but it also affects the interviewer and the respondent.

Respondent-related issues. Most CAPI studies have found that respondents react positively to CAPI, if at all. Nonetheless, there are several questions the field test will address in collecting data from parents, children, and child care providers via CAPI. Some of them are operational questions regarding the interviewer-respondent interaction.

- Do respondents have any reactions to the CAPI set-up time?
- Are response times acceptable?
- Are there any cultural differences in the degree of respondent acceptance of CAPI?

- Do respondents often correct or change previous answers? If so, does this present a problem in CAPI?
- Do respondents react in any way to the constraints imposed by the sequences of CAPI activities?
- Do Spanish-speaking respondents tend to switch between Spanish and English during the interview? If so, does the CAPI system support this?

These questions will be addressed by examining the IRQ, interviewer diaries, the CAPI data, validation calls, and the data from in-person observations. Additional information will come from the interviewer debriefings.

Interviewer-related issues. The field test will also address a number of issues concerning the interviewer use of CAPI and administration of the direct child assessments:

- Did the interviewers seem comfortable in using the CAPI technology?
- How successful were the interviewers in backing up and changing previous responses?
- Where did interviewers make errors most often? Were they able to document their problems adequately?
- How well were the interviewers able to administer the direct child assessments?
- Did the interviewers seem comfortable using the video cameras?
- Were the NCAST videotapes of sufficient quality for coding purposes?
- How well did the parents and interviewers perform the Q-sort task?

The record of calls made to the CAPI hot line, IRQs, in-person observations, item nonresponse rates, comments, NCAST coder feedback, and supervisor problem logs will provide data to address these issues.

Software- and application-related issues. There are several major questions the field test will address concerning the software developed for the field test:

- Are there any program bugs?
- Are the programs adequately flexible to handle the situations that interviewers encounter in collecting data from parents and children?

- Is the software able to handle interviews that are broken off and must be restarted at a later time?

The records of the CAPI hot line, the IRQ, in-person observations, audiotape recordings, and the interviewer debriefing will provide data to address these issues.

Hardware-related issues. The field test will address a number of issues related to the chosen hardware:

- Are the machines light enough for interviewers to carry the distances that are required?
- Is the screen readability adequate in the lighting situations found in homes?
- Can the laptop be powered by batteries long enough to finish an interview when AC power is unavailable?
- Are the laptops durable enough to withstand field conditions?

The records of the CAPI hot line, the IRQ, in-person observations, and the interviewer debriefing will provide data to evaluate these issues.

Data Collection Issues. There are a number of major field operations issues to be evaluated in the field test. These issues are the following:

- Evaluating procedures used for locating, contacting, and tracking the children's families;
- Obtaining and maintaining parent cooperation;
- Evaluating the effectiveness of respondent incentives;
- Evaluating the sample flow;
- Evaluating problems with the birth certificate records data;
- Addressing concerns about respondent burden;
- Assessing the effectiveness of the approach to interviewer training;
- Administering direct assessments with children using trained field staff;
- Collecting data from resident and nonresident fathers;

- Mode of data collection (self-administered, telephone, or in-person) for resident and nonresident fathers; and
- Collecting data from child care providers.

These issues can be articulated in question format. For example:

- How well will the children cooperate in the direct child assessments?
- How well will child care providers cooperate?
- How cooperative will fathers be in completing the self-administered questionnaires?
- How will parents respond to the length of time needed to collect the parent interview and direct child assessments?
- What kind of concerns were raised by parents regarding the direct child assessments?
- What cultural differences affected respondents' participation in the interview?

These questions will be evaluated using the interviewer rating questions of the training, pre- and post-training interviewer skills self-assessment questionnaires, field production and cost reports, instrument response rates, IRQs and diaries, the Record of Calls and Non-Interviewer Report Forms, validation calls, supervisor problem logs, CAPI hot line reports, interview mode variables, training evaluations, as well as the interviewer debriefing and item nonresponse rates.

Data Processing Issues. In addition to those issues already listed under CAPI above, additional data processing issues to be evaluated include the following:

- Whether the electronic transfer of collected data and software revisions can be easily and accurate accomplished;
- How much post-CAPI data cleaning is needed;
- The coordination of CAPI and hard-copy instruments; and
- Whether the case assignment system can be easily and efficiently used.

B.5 Individuals Responsible for Study Design and Performance

Those listed below participated in the study design and are responsible for the collection and analysis of the data.

Jerry West, NCES	202-219-1574
Michael Kogan, NCHS	301-437-8954
Rose Maria Li, NICHD	301-496-1175
Vic Oliveira, USDA	202-694-5434
Brad Edwards, Westat	301-294-2021
James Green, Westat	301-251-4295
Graham Kalton, Westat	301-251-8253
Christine Nord, Westat	301-294-4463
Gary Resnick, Westat	301-294-3846
Nick Zill, Westat	301-294-4448

Part C

Part C: Justification

PART C: JUSTIFICATION OF THE ECLS-B QUESTIONNAIRES

C.1. Introduction

This section presents the content of the Early Childhood Longitudinal Study, Birth Cohort (ECLS-B) questionnaires in detail. There are seven sets of instruments:

- 9-month parent interview
- 9- and 18-month direct child assessments
- 9- and 18-month interviewer observations
- Resident father self-administered questionnaire
- Nonresident father instrument
- 18-month parent interview
- 18-month child care provider instrument

C.2 9-month Home Visit

C.2.1 9-month Parent Interview

The 9-month parent interview consists of 26 sections that obtain information about aspects of the child's health, growth, and development, and environmental factors that predict children's outcomes such as household composition, socioeconomic status (SES), family literacy and nonparental child care. Appendix A contains the 9-month parent instrument and a detailed description of the items included in the 9-month parent instrument.

C.2.1.1 Respondents for the 9-month Interview

Interviewers will follow established rules for determining who the best respondent or informant is for the parent interview. In most instances, the respondent will be the child's biological mother. If the child's biological mother is not living in the family household with the child, the child's

biological father or legal guardian will be identified as the primary parent informant In cases where an infant is adopted prior to enrollment in the study, the adoptive family rather than the biological family will be the informant for the ECLS-B parent instrument. The parent instruments will include one path for nonbiological parents.

When the CAPI specifications for the parent instruments are developed, the instruments will include one logical path for biological mothers and another logical path for nonbiological parent respondents. At the beginning of the CAPI interview, interviewers will enter the data necessary to identify who the respondent is for the parent interview. The CAPI program will use that data to guide the skips or the word choices for questions so that the questions are worded or skipped as is appropriate for either a biological mother respondent or nonbiological parent respondent. The CAPI specifications will also include instructions for specific word display options for individual questions and for global word displays. For example, if the sample child is a female, the word "she" will be displayed in all gender-based pronoun displays in questions about the child. Only the 9-month parent instrument requires specific path instructions for a nonbiological parent respondent. The 9-month parent CAPI specifications will include instructions to skip the following questions for nonbiological parent respondents:

- B1-B4 Questions about breast-feeding the child
- D1-D30 Questions about pregnancy and wantedness of child
- D39-D41 Questions about separation from child
- V1-V7 Questions about employment before child was born and maternity leave
- V22 Question about current job same as job before child was born
- V29-V34 Questions about returning to a job after the birth of the child

C.2.1.2 Justification for the 9-month Parent Interview Items

Section B – Feeding and Developmental Milestones

Infant Feeding and Nutrition. Early nutrition is critical for later growth and development. Inadequate nutrition in infancy is associated with failure to thrive and various physical and intellectual

problems. Section B begins with a number of items that obtain information about early breast feeding and other feeding practices and the adequacy of infant nutritional intake.

Developmental Milestones. The very early or extremely late attainment of key developmental milestones may be associated with later intellectual giftedness or developmental abnormalities and may be influenced by the richness of the child's environment. Therefore, a set of questions was adapted from the Child Development Inventory (Ireton, 1992) to assess the age at which key milestones were achieved. Items include how old the child was when he/she first sat up, fed him/herself, and was able to crawl on his/her hands and knees.

Section C – Child Temperament

Temperament can be defined as individual differences in a set of personality characteristics that appear early in life and are probably biologically based. These characteristics include attention, activity level, sociability, and emotionality and may be associated with later education outcomes. Temperament exerts its effects both directly (a high activity level may interfere with appropriate school behavior) and indirectly, for example by influencing the quality of care that the child receives from the parents. The items included were originally developed by Rothbart (The Infant Behavior Questionnaire) and by Campos and were used in the National Longitudinal Study of Youth (NLSY) and the Canadian National Study of Children and Youth (NLSCY).

Section D – Pregnancy, Breastfeeding, and Early Child Feeding

Unplanned pregnancy is related to risk taking behaviors during pregnancy, low birth weight, poor child health, and infant mortality. Seven questions gather information about whether the pregnancy was planned, about birth control use, and the wantedness of the child. Maternal health during pregnancy is obtained by the mother's Body Mass Index (BMI), postpartum weight loss and maternal receipt and content of prenatal care, such as the use of ultrasound. Health practices during pregnancy are assessed in a set of questions that ask about vitamin and mineral supplements and about maternal risk behaviors before and during pregnancy (e.g., alcohol intake and cigarette use). Information about pregnancy complications is obtained, with supplementary information about prematurity or method of delivery obtained from birth certificates. Information is also obtained about indicators of an at-risk pregnancy by

asking whether any previous births were pre-term or low birth weight. Finally, because neonatal health is an important predictor of later child development outcomes, a set of questions obtains information about the newborn's health.

Section E – Mother's Background

The section begins by determining who the respondent lived with in his/her youth. Maternal educational attainment is also a major predictor of child outcomes, with children of better-educated mothers having more positive outcomes (White, 1982; Zill, 1996). Information is obtained about the mother's level of education, high school experiences, and grades received. In addition, cultural variations in childrearing practices may be associated with the mother's country of origin, how long she has resided in the United States, her religion, and the stability of her own family life. Several questions in this section will obtain this information.

Section F – Household Composition

Household composition determines aspects of the child's home environment, and Section F obtains a complete roster of all household members living with the child, both adults and children, their ages, gender, ethnicity, and relationship to the child.

Section G – Marriages and Partner Relationships

In order to examine the stability of parenting figures in children's lives and the parenting support mothers receive from partners, a set of questions ask about the mother's marital/partnership history. The last items in this section ask about the quality of the respondent's relationship to his/her partner because the quality of the marital relationship has been found to be associated with children's outcomes. One of the most important dimensions of marital quality has been found to be marital conflict that may have indirect effects on the child through its negative effects on parenting behavior and direct effects on the child by negatively influencing the child's psychological adjustment. A second important dimension is the parents' ability to resolve conflicts. Therefore, the last set of questions obtains information about how the couple deals with serious disagreements.

Section H – Expectations for Child Development

Parental knowledge about child development may be related to their expectations for their own child's development. Researchers have found that greater parental knowledge about child development is associated with positive parenting practices and child outcomes. The 9-month Parent Interview includes two sets of items that ask about parents' expectations for child development in order to establish a baseline measurement for this construct.

Section I – Home Educational Activities and Language Environment

Measurement of home activities that stimulate development is critical because numerous studies have indicated that high levels of positive, age-appropriate cognitive stimulation for infants is related to more optimal outcomes in social and cognitive development. One of the most important aspects of a stimulating environment is the amount of verbal interaction that infants have with parents. To obtain information about the language environment of the child, several questions ask about languages used in the home, by whom, and what language(s) is (are) spoken to the child. In addition, information is obtained about the literacy environment of the home and the amount of maternal-child literacy related activities, such as book reading. More generally, information is also obtained about parental and child shared activities, such as going to the park.

Section J – Parenting Behavior and Attitudes

Affectionate parental behavior has been associated with numerous positive outcomes for infants and toddlers, as has parental sensitivity and responsiveness to infants' signals. An important aspect of parenting styles is the extent to which parents value obedience to authority and try to control the child's behavior. Research suggests that high levels of authoritarian parenting is negatively associated with children's school outcomes. The questions in this section therefore assess authoritarian parenting attitudes.

Sections K-N – Child Care Arrangements

Most children are now in some form of nonmaternal care by the age of 6 months. Therefore, an extensive module of questions asks about the child's participation in child care arrangements. Similar information about basic child care issues is obtained for all types of child care whether a family child care provider, a relative, or a child care center. Included are the number of changes in nonparental care the child has received, the child's age at first caregiving arrangement, the quality and consistency of the care, the type and cost of care, group size and the total amount of time the child spends in care arrangements. Finally, Section N includes a set of questions about the relative importance of various considerations to the parent when selecting the child's care arrangements, such as cost, convenience, quality of care, etc.

Section O – Child Health

Risks to infant's health and physical well-being can emerge at any time. Because the stresses of serious medical illness and hospitalization can be traumatic and have widespread implications for children's subsequent growth, a series of questions obtain information about the infant's serious illnesses and hospitalizations. In addition, information is obtained about the number and location of well-baby check-ups. Because of time constraints, specific information is obtained only about the most prominent infant illnesses, including ear infections, gastrointestinal illnesses, and respiratory infections. There is also a series of questions about the child's health insurance coverage, an important determinant of the adequacy of the child's health care.

Section P – Family Health

Four groups of questions address different aspects of family health. The presence of a household member with a physical problem is assessed in a single question. The second set of questions obtains information about maternal health status and whether she is limited in what she is able to do by a health problem. Next, the respondent is asked about any alcohol and/or cigarette use. Finally, maternal depression, which has been found to be a strong predictor of children's outcomes, is assessed in a set of questions that ask about her mental health status, including depression and substance abuse.

Section Q – Household Food Sufficiency

Adequate nutrition is critical for children's growth and development. Children of low income or poverty-level families, children of adolescent mothers, and children whose parents are receiving welfare may be at risk of undernourishment. Furthermore, because of the current emphasis on welfare reform, children may be at even greater risk of undernourishment. A set of items contributed by U.S. Department of Agriculture (USDA) obtain information about household food sufficiency.

Section R – Social Support

A supportive social network can mitigate stressful life events. Because the social support network of the family is important for child outcomes, the primary caregiver is asked two sets of questions, one about sources of support and the other about her relationship with her parents.

Section S – Community Support

Support that comes from the community may influence child outcomes directly by providing opportunities and enriched experiences to the child and indirectly by supporting parenting practices and parental well-being. Because community support may interact with child and family variables, it is important to obtain such background information as religiosity, membership in community organizations, and socializing with friends and neighbors. In addition, this section asks if families receive support directly through the receipt of services (e.g., job training, transportation subsidies, and help with housing costs).

Section T – Family Routines

Predictable family routines have been found to play an important role in fostering positive educational and behavioral outcomes in school-age children, particularly in the case of future-oriented behaviors. For this reason, the primary caregiver is asked about the frequency and stability with which the family engages in certain routine activities with the child.

Section U – Biological Father's Information

Most information about resident fathers will be collected in the self-administered father questionnaire at the baseline 9-month interview. However, key variables about the biological father will be included in this interview in order to obtain information about the father's contributions to child rearing, his age, race and ethnicity, education, and his employment status and current occupation. In the case of nonresident biological fathers, information will be obtained in the interview about the level of his contact and involvement with the child, which has been found to predict more positive outcomes in children. The questions about the level of contact the biological father has with the child and the mother will be used to define the sample of eligible nonresident fathers. Information will also be obtained about nonresidential fathers' responsibility for and financial support of the child, whether he has assumed legal responsibility for child support and the extent of his involvement in child-rearing.

Section V – Maternal Education, Employment, and Income

Research on the effects of maternal employment on children's outcomes has been equivocal, therefore, it is important to obtain information about maternal employment. This is done in a series of questions that collect information about current maternal employment, the number of hours she works, and receipt of job training.

Section W – Welfare and Other Public Transfers

Receipt of public assistance is an indication of a serious level of poverty and its receipt may indicate the family's ability to increase its functioning, offering a better environment for the child. For these reasons, a set of questions ask whether the family has received certain forms of income assistance.

Section X – Household Income and Assets

Family income is an important determinant of the family's ability to meet the needs of a growing child. Yet, families with similar incomes may experience different levels of economic well-

being depending on other assets, such as home ownership and ownership of a car. Therefore, this section asks about family income and ownership of a home and a vehicle. In addition, questions are included that ask about stocks and bonds and savings and checking accounts, which are markers for engagement in the market economy and capture the family's financial liquidity and ability to manage in the face of adversity.

Section Y – Woodcock-Johnson Word Identification Test

The Word Identification subtest of the Woodcock-Johnson Psychoeducational Batteries is administered to parents at the end of the 9-month home visit. The main reason for administering this test is that parent's word knowledge and general cognitive ability have proven in numerous studies to be very important predictors of the child's cognitive and language development. The Word Identification Test, involving a test of the parent's word decoding skills, provides a brief and low-cost alternative that correlates very highly with more comprehensive measures of reading comprehension and cognitive ability.

C.2.1.3 Sensitive Questions in the 9-month Parent Interview

The 9-month parent interview does contain some items that are sensitive. All but three of these items are drawn from other national studies. The following list itemizes the 31 items that could be judged sensitive in the 9-month parent interview:

- D1 to D7: Wantedness, use of birth control
- D21 to D28: Alcohol use during pregnancy
- E14 to E15: Special classes and repeat a grade
- G7 to G8: Ever being married to biological father, ever live together in a marriage-like relationship
- G15: Reasons for arguments
- G16: Conflict resolution style
- G17: Being afraid of spouse
- P10 to P11: Current alcohol use

- P12 to P14: Depression, psychological help
- P15: Life stress items
- Q1-Q4: Household food sufficiency
- U40: Type of child support agreement for nonresident father
- U41: Whether father signed birth certificate indicating paternity

We propose to move the most sensitive of these items to a self-administered form that will be handed to the respondent for completion near the end of the interview. Although we will make every attempt to secure privacy for the respondent and avoid conducting the interview when another adult is present and within earshot, we acknowledge that some sensitive questions could pose a threat to some respondents, if their spouses knew their answers tot he items. A self-administered form will serve to reduce any interviewer or social desirability effect (even in the vast majority of situations, when no other adult is present), and will make the data collection experience more private and the data less susceptible to interception by a spouse. The interviewer will incite the respondent to place the completed form in an envelope and seal it. We plan to include D1-D4, G16, G17, and P12-15 on the self-administered form.

The observations that are proposed to be made of participants and their homes pose no risk to the respondents. The Home Observation For Measurement of the Environment (HOME) scales has been used by other national surveys. The data are being collected by observation instead of direct questions in order to reduce the burden on the respondent and because some items an independent observation is deemed to provide data that are more valid and reliable. The handling of infants is limited to the interviewer assisting the parent in positioning the child for measuring, a procedure that occurs in the home under the parent's direction.

C.2.1.4 Contacting Nonresident Fathers

Because of the substantial policy interest in nonresident fathers, the ECLS-B field test will explore the feasibility of interviewing such fathers. Several existing studies, including the Child Development Supplement of the Panel Study of Income Dynamics and the Fragile Families Study, have attempted to interview nonresident fathers. These studies suggest that the costs of locating and persuading nonresident fathers to participate in the studies increases the lower the fathers' involvement in their children lives. However, no study has yet established the level of contact at which tracking and

conversion costs become prohibitive. One goal of the field test is to examine the response rates for nonresident fathers with different levels of involvement in their children's lives. Thus, the field test will attempt to interview nonresident fathers with a wide range of involvement levels, but all most have some minimal amount of contact with their children or with their children's mothers/guardians. Results from the field test will be used to determine whether to interview nonresident fathers in the actual ECLS-B and, if the answer is yes, the level of involvement that they must have to be included. For the purposes of the field test, nonresident fathers are the child's biological fathers or, for children who were adopted by both parents, the adoptive fathers.

For the field test, we will use information already being collected in Section U and Section Z in the main 9-month parent interview to determine whether to seek the respondents' permission to contact the nonresident fathers. Essentially respondents will be asked permission to contact the nonresident fathers under the following circumstances:

1. The nonresident father has seen the child in the last month; or

2. The nonresident father has not seen the child in the last month, but has had at least 7 days of contact with the child within the last 3 months; or

3. The nonresident father has not seen the child in the last month, has had less than 7 days of contact with the child within the last 3 months, but has been in touch with the mother/guardian by telephone, letter, or other means at least once a month in the last 3 months.

However, if nonresident father has not seen the child in more than a month and the mother/guardian reports that she/he does not want the father to see the child, we will not ask the mother/guardian for permission to contact the father.

C.2.2 9-month Direct Child Assessment

The direct child assessment is designed to assess several key constructs in child development. The mental and motor scales of the Bayley Scales of Infant Development (BSID-II) directly observe gross and fine motor development and receptive and expressive language skills. The Behavior Rating Scale (BRS) of the BSID-II includes observations of orientation engagement, emotional regulation, and motor quality. The Nursing Child Assessment Teaching Scale (NCATS) captures caregivers' cognitive growth fostering and the child's responsiveness to caregiver. Each of these measures

is proposed at the 9- and 18-month direct assessment. With the addition of a 30-month direct assessment using these measures growth curve modeling can be done.

C.2.2.1 BSID-II

According to Sattler (1990), the BSID-II is widely regarded as the best general measure of early child development currently available. For the purposes of ECLS-B, it has the advantage of having been used previously in such notable studies as the MacArthur Longitudinal Twin Study (Emde, et al, 1992; Plomin, Campos et al, 1990, Reznick, Corley and Robinson, 1997) as well as in numerous large-scale studies including the Early Intervention Collaborative Study (EICS) (Shonkoff, et al., 1992), the Longitudinal Consortium Studies (Lazar and Darlington, 1982), most recently in the Comprehensive Child care Developmental Program (CCDP) evaluation, and the national evaluation of Early Head Start. Most of these studies used the BSID-II for large samples, which supports its use in ECLS-B. The CCDP evaluation involved a sample of approximately 2,600 children who were administered the BSID-II, and the Early Head Start study involves a sample of approximately 3,000 children from 17 diverse communities across the country. Scores obtained on this measure, therefore, can be used for comparison with results obtained in other studies.

The BSID-II is an individually administered examination that assesses the current developmental functioning of infants and children from 1 month to 42 months. In total, the BSID-II is composed of two sets of items: 111 items that assess motor ability (such as rolling, crawling and creeping, sitting, standing, walking, running, and jumping) and 178 items that assess mental ability (such as memory, habituation, problem solving, vocalizations, language and social skills). The items in the BSID-II are arranged by developmental difficulty. The BSID-II specifies sets of items to administer to a child depending on his or her chronological age. For example, the item sets specified for a 9-month-old child include 21 items administered with 4 items observed incidentally from the mental scale, and 13 items administered from the motor scale and one item observed incidentally. The entire BSID-II requires approximately 30 minutes to administer to 24-month-olds, with somewhat less time required for 9-month-olds.

Raw scores obtained from the number of passed and failed motor ability items and mental ability items are then converted into a Psychomotor Development Index (PDI) and a Mental Development Index (MDI), which reflect the two domains of the items. These index scores are normalized standard

scores derived from a national stratified sample that included only normal infants and children (children with physical problems, prematurity, medical complications, or developmental delay were not included in the standardization sample).

Originally developed in 1933 as the California First Year Mental Scale (Bayley, 1933), it was reorganized in 1969 as the BSID and was revised in 1993 as the BSID-II (Psychological Corporation, 1993). Improvements to the revised version include better normative data, especially in the cases of infants from minority groups, infants with disabilities (including developmental delay and Down syndrome), premature infants, HIV+ infants, and infants who were prenatally drug-exposed. In addition, the second edition extended the applicable age range downward to 1 month and upward to 42 months and imported items from the Gesell. Hence, it is feasible and desirable to re-administer the BSID-II at later ages in order to obtain scores on the same measure at least three different time periods, an important consideration in a longitudinal study.

A critical psychometric property of any intelligence test to be used longitudinally is its ability to show persistent individual differences across time, especially with regard to 9- to 30-month age range when the achievement of major developmental milestones, such as locomotion and language acquisition, leads to major transformations in behavior. In the Louisville Twin Study, the MDI (mental development scale of the BSID) was administered to approximately 400 children at 12, 18 and 24 months. MDI scores showed correlations of r =.56 between 12 and 18 months, r = .48 between 12 and 24 months, and r = .67 between 18 and 24 months (Wilson, 1983). Others have placed the MDI's test-retest reliability between .76 and .80 (Spreen and Strauss, 1991; Thompson, Fagan and Fulker, 1991).

The BSID-II manual reports relatively high internal consistency coefficients of .84 and .85 for the metal and motor scale, respectively, at 9 months of age, and an average reliability (stability) coefficient of .88 for the mental scale and .84 for the motor scale across all age levels. Test-retest reliability has been estimated between .76 and .80 (Spreen & Strauss, 1991; Thompson, Fagan & Fulker, 1991).

However the BSID-II is not without some problems, particularly when testing children who are outside of the range of normal development for their chronological age, either due to prematurity, low birth weight, genetic abnormalities, or other developmental delays. Mayes (1994) administered the BSID and BSID-II to both normal and delayed infants and preschoolers and reported different scores depending upon the scoring method used. In general, the higher the item set at which testing begins, the higher the

obtained developmental age (DA), and the lower the starting item set, the lower the obtained DA. For children with developmental delay, who by definition function below their chronological age (CA), the best estimate of their development is not the child's CA. In addition, delayed children are more likely than normal children to be uneven in their development and demonstrate test scatter. This is an important consideration for the ECLS-B cohort which, because of its size, is likely to encounter a large number of children (at lease in absolute terms) who show evidence of developmental delay or other physical condition that may impede testing performance. To combat this problem, we will use the same approach used in the Early Intervention Collaborative Study (EICS). In EICS, a raw score on the mental scale was obtained by first adjusting the starting age for number of weeks born premature, if necessary, and administering the test from that age until a basal and ceiling level are reached. From the raw score obtained, a mental age equivalence score can be obtained using the scales in the BSID-II manual. This method for testing children with developmental delay is also recommended by the BSID-II.

There are also important benefits to using the BSID-II for developmentally delayed children that outweigh these potential scoring problems. There are few developmental measures in existence that allow both normal and delayed children to be adequately tested, and most of the known developmental measures for delayed children are highly specialized according to the specific disability or delay the child shows. Even though the BSID-II scales have not been standardized on a population of children with disabilities, the EICS used the BSID-II mental scale to assess 190 children with a variety of disabilities. The BSID-II scales were used because they are the most frequently used infant assessment instrument, and the scores are useful for comparison with normal samples (Shonkoff et al., 1992). In fact, at a meeting held by the Office of Special Education Programs, Department of Education, to discuss the measurement of children with disabilities, the consensus by agency staff and consultants was to stay with the BSID-II, as this will adequately capture the bulk of children with some form of disability. Additionally, there are methods for altering specific items so that the child's disability does not get in the way of his/her performance on these items, thereby yielding a reliable score.

There is some debate concerning the influence of the setting (home vs. laboratory) on BSID-II scores, but the empirical evidence supporting the notion that infant assessments are affected by the location in which they are administered is relatively weak. Several studies in the 70s and 80s investigated the question of home vs. laboratory effects on scores specifically for the BSID-II. Durham and Black (1978) reported that when 16- and 21-month-old children were examined in the home using the BSID-II within 3-15 days following a laboratory-based assessment (using the BSID-II) there was a statistically significant rise in scores, but when the home assessment preceded the laboratory assessment (controlling

for the time interval between tests), there was no difference in test scores. This finding was interpreted to suggest that the infant's greater familiarity with the home setting resulted in higher test scores. However, a later study designed to disentangle test-retest reliability of the BSID-II from setting effects revealed that total raw scores and their equivalent MDI were not affected by setting differences or by the sequence of the home and clinic administrations (Horner, 1980). This study involved a sample of 24 9- and 15-month-old infants (12 males and 12 females in each age group) who were tested 1 week apart in the home and clinic. The findings suggest that differences between settings may be confounded with test-retest instability, particularly for very young children. In fact, the issue of confounding influences when determining the true effect of the home (compared to out-of-home) settings on assessment scores is a theme running across many of the studies we found.

In another study, Campbell, Siegel, Parr, and Ramey (1986) used home-based administration of the BSID for a sample of 305 12-month-old infants born at full term in rural North Carolina. They found suspiciously high MDI scores for a sample systematically drawn from the entire population of an 8-county region. They then tested the competing hypotheses that either the home-based testing positively affected the scores or the 1969 Bayley norms were outdated. They found strong support for the hypothesis that the Bayley norms for 12-month-olds are outdated, and they ruled out the notion that the home setting may have affected the scores. This finding further supports our use of the second version of the Bayley, the BSID-II, rather than relying on the original version.

Westat recently conducted a pretest of the ECLS-B instruments in the style of "dress rehearsals" for the home visit involving the administration of the BSID-II along with other measures, to children ranging in age from 5 months to 20 months. According to our experiences using the BSID-II in this pretest, the entire BSID requires approximately 35 minutes to administer to 18-month-olds, and approximately 20 minutes for 9-month-olds. There is a recommended method for administering items that does not follow the order of the items but rather is based on the use of the test materials, making it easier for the administrator to move quickly through all the tasks. In the pretest, very few children did not reach basal and ceiling in the starting item set (which corresponds roughly to their chronological age). We also gained experience administering the BSID-II to a developmentally delayed infant and to twins with positive administration experiences. Finally, the parents found the BSID-II enjoyable to watch and to assist. During the pretest, they reported in observing their infant perform tasks that they did not know the infant could do, and they enjoyed assisting the administrator as it gave them a sense of being a collaborator in the study rather than simply a respondent. In general, our pretest experiences with the BSID-II were positive and support its use in ECLS-B. The pretest report also indicates some potential

problems with the administration of the BSID-II, particularly for 18-month-old children, but most of these problems can be minimized through proper training and practice with the measure.

We have had the benefit of receiving materials from the Early Head Start project, currently being conducted by Mathematica Policy Research Inc. for the Administration for Children and Families, U.S. Department of Health and Human Services. They spent considerable time devising methods to assist regular survey field researchers to administer the measure in a standardized format. They also consulted heavily with the Psychological Corporation, publishers of the BSID-II, on interpretation of some items and tasks. ECLS-B will therefore benefit greatly from these efforts, although they administered the BSID-II at different measurement intervals (14 and 24 months) and thus the materials for items sets used in ECLS-B will need to be developed, following on the work already done for Early Head Start.

Based on discussions with Mathematica, the BSID-II appears to be a "challenging but doable" instrument for use in national studies such as ECLS-B. The challenge appears to involve training the field staff sufficiently so that they administer the measure in a standard fashion and that they score the child's performance reliably. It appears that in the CCDP evaluation, conducted by Abt Associates, interviewers had difficulty becoming certified during the training period and there were concerns about their maintenance of quality control throughout the data collection period. However, Mathematica reports that they had excellent reliability and over 90 percent of their field staff were certified during the training. There are extensive methods they employed to monitor field staff performance using in-person visits and videotaping of random BSID-II assessments, as well as a 300-item checklist to determine that the tasks were done according to the requirements.

Mathematica has provided us with many of the training materials they used to train field staff in the administration of the BSID-II for the Early Head Start Study. We will use the materials they developed for 14- and 24-month assessments as a basis for developing our own training materials for the 9- and 18-month assessments. Based on Mathematica's experience, we anticipate that training on the BSID-II will last about a day and a half. The protocol for administering the BSID-II is found in Appendix B.

C.2.2.2 NCATS

The Nursing Child Assessment Satellite Training (NCAST) (Barnard, 1978) is recommended for use during the direct child assessment of ECLS-B because of its ability to predict cognitive and socioemotional outcomes at 2 and 3 years of age. NCAST is the name of the entire package consisting of two interaction tasks with six subscales scored for each task, as well as a set of assessment and early intervention programs that train service providers to assess and intervene to improve parent-child interactions in clinical settings. The two tasks and the scoring systems for each task are named: (a) the Nursing Child Assessment Feeding Scale (NCAFS) and (b) the Nursing Child Assessment Teaching Scale (NCATS). Thus NCATS refers to the specific observational system for scoring the teaching task while NCAST refers to the entire assessment and intervention package.

The NCATS has been used with success in several large-scale studies, including the EICS (Shonkoff, et al., 1992), the NICHD Early Child Care Study, the Evaluation of the CCDP, and the Memphis New Mothers Study. It is also being used in the national evaluation of Early Head Start involving a sample of approximately 3,000 infants across the country. The use of the NCATS has also been strongly recommended by a number of our consultants and has been viewed as the most viable measure of parent-child interaction by our technical review panel (TRP) because it is one of the few field-tested systems with excellent training materials, good psychometric properties, and, while brief, it produces robust scores predictive of later growth in both cognitive and social-emotional domains.

Many of the important child milestones that are taking place at 9 months of age are difficult to measure because the important processes related to developmental progress involve interactions between parent and child—the affective and behavioral components present in these interactions. For example, constructs such as temperament, attention, emotion and state regulation, communication, cognition, and even some areas of motor development are mediated by interactions with primary caregivers (i.e., the parents). Rather than compensating for the weaknesses of parent report or direct child assessment by adding items to existing parent or child instruments, it is important to sample mother-child interaction during a brief structured system such as that developed by the NCAST. Observational methods are particularly helpful in assessing important aspects of parenting behavior such as contingency, responsiveness to nonverbal cues, responses to the child's distress, use of language, and the provision of opportunities for social-emotional and cognitive growth.

The NCAST system was developed in the early 1970s through a contract to Dr. Kathryn Barnard and her team at the University of Washington School of Nursing from the Division of Nursing of the U.S. Public Health Service. The system was grounded in general systems theory and the importance of the caregiving in the early months of an infant's life to establish routines, patterns of interaction, and patterns of communication. It was informed by a groundswell of research demonstrating the critical links between caregiver-infant interaction and child development outcomes. The basis of the NCAST approach is a model of parent-infant interactions developed by Dr. Barnard.

Barnard's model focuses on the ability of the caregiver and child to adapt to one another during the first year of life, to establish a synchronous interaction directed at least initially by the parent but that responds to the infant's nonverbal cues. Optimal growth in social, cognitive, and language domains require the infant to receive sufficient quantity and quality of stimulation appropriate to the infant's developmental stage, and this is done primarily within the context of a mutually rewarding, reciprocal interaction. As parents respond to the infant's signals, infants typically provide feedback such as maintaining or terminating social interaction, modulating arousal, or showing affect. The bi-directional "give and take" of behaviors that facilitate interaction teaches an infant he or she is able to control and manipulate the environment and establishes the infant's ability to regulate his/her sleep-wake states and emotions. Thus, the caregiver (usually the mother) and the child are involved in developing a highly sophisticated interaction pattern or what has been described by a number of researchers as a mutually adaptive "waltz" (Barnard, 1976), contingency (Greenspan and Lieberman, 1980), attunement (Stern, 1985), emotional availability (Emde, 1980), reciprocity/mutuality (Brazelton et al, 1975), or synchrony (Censullo et al, 1987).

The metaphor of the waltz in Barnard's model suggests that both the infant and the mother have responsibilities to maintain the interaction, although the parent has the bulk of responsibility in the earlier stages of development, and this shifts over time as the infant's capacities grow. The infant is responsible for producing clear cues and being responsive to the caregiver. The caregiver has the responsibility of responding to the infant's cues, alleviating the infant's distress, and providing opportunities for growth and learning.

Interruptions in this adaptive process can originate in the caregiver, the child or the environment (NCAST Manual, 1994). For example, a caregiver who is depressed, stressed, or who lacks sufficient knowledge of child behavior may be less sensitive to the child's cues, unable to alleviate the child's distress, or unable to provide growth fostering situations for the child. Interference in the adaptive

process can also originate in the child if the infant is unable to give clear cues or to respond to the caregiver. These generally occur among preterm infants, those born with physical conditions that effect their ability to give cues or respond to the caregiver, and are also seen among drug-exposed infants (NCAST Manual, 1994). In fact, one of the strengths of the NCAST system, comprising the feeding scales (NCAFS) and teaching scales (NCATS) are their ability to discriminate between subsamples of infants with varying levels of developmental or environmental insults that affect their growth and development, such as those enumerated above.

NCAST has a database from approximately 2,100 infants with representation from Caucasian (54%), African-American (27%) and Hispanic (19%) mothers. There were no differences in teaching scores by gender. The NCAST Teaching Scale (NCATS) scores have shown differences between specific subgroups of families in ways that are predicted from the theory and design of the measure. Hispanic mothers tend to score lower on the Cognitive Growth Fostering subscale, but they score better on the Sensitivity to Cues and Response to Distress subscales, reflecting different styles of interacting with their children. These differences remained after controlling for maternal education, English language ability, and acculturation. Mothers with less than high school education, less than 20 years of age, and those who are abusive, stressed, or drug-using also score lower on the NCATS. Finally, the NCATS scores are lower for later born children, preterm infants, and infants at high medical or social risk. While these differences appear to suggest that the NCAST scores are biased, it is important to note that these systematic differences are coherent and predicted from the nature of the measure. These findings do not reflect measurement error per se but rather they reflect meaningful differences in parent-child interactions that are related to later developmental outcomes and substantiates the predictive and discriminative validity of the NCATS.

The psychometric properties of the NCAST Teaching Scale (NCATS) support its use in a national study such as ECLS-B. In terms of internal consistency, the alpha coefficients for the total parent score (a summary of the four parent subscales of the NCATS), the total child score (a summary of the two child subscales) and the overall total score (all subscales) were .87, .81 and .87 respectively. For the two scales of interest in ECLS-B, the Cronbach's alpha was .78 for both the Responsiveness to Caregiver and Cognitive Growth Fostering subscales, attesting strong internal consistency of these subscales despite the lower number of items contributing to the alpha coefficients. Cognitive Growth Fostering measures the caregiver's ability to provide intellectual stimulation for her child while the Responsiveness to Caregiver subscale is a measure of the child's responsiveness to the caregiver's behavior.

Reliabilities computed separately for African-American and Hispanic subsamples were also high, .89 and .87 respectively for the parent score, .83 for the child score (for both subgroups) and .90 and .88 for the NCATS total score. Test-retest reliability for the teaching scale, using observations at 1-, 4-, 8-, and 12-months was high for the total parent score (.85) and lower for the total child score (.55). These test-retest reliabilities are impressive because the multiple measures at 3- to 4-month intervals reflect developmental change as well as test-retest reliability.

The use of the NCAST Teaching Scale (NCATS) in the Comprehensive Child Development Program lends support to its use in a study such as ECLS-B. Field staff trained by the NCAST national office reached 85 percent agreement between independent coders. The CCDP sample, consisting of approximately 800 families below the 1989 Federal Poverty guidelines from 22 different project sites in 19 different states, reveal mean scores on the teaching task below the NCAST database sample (Morisset, 1996). However, compared with blacks and Hispanics, more white dyads earned low scores. At 2 years of age, 80 percent of children in the black subsample with teaching scores above the high-risk cutoff earned mental development test scores that indicate adequate development. At 2 years, the comparable value for the Hispanic group was somewhat lower (69%); it was higher (86%) for the white subsample (Morisset, 1996). For all subgroups of the CCDP sample, the teaching scale score was significantly related to the mother's education.

Data from the NCAST national database suggest that the NCATS shows excellent concurrent and predictive validity. The Cognitive Growth Fostering subscale correlates concurrently with the HOME scale for children 1-12 months old (r = .45), 13-24 months (r = .46) and 25-66 months (r = .61). These are strong correlation coefficients and suggest that a significant amount of variance in home environment scores can be explained solely by the NCATS. In a separate study involving 50 3-year olds and their caregivers, Tesh and Holditch-Davis (1997) report significant correlations between the HOME and the NCATS parent total score and combined parent and child total score (r =. 51 for the parent total score and r = .41 for the combined total score). However, the NCATS child total score do not appear to be as strongly correlated with the HOME total score. The NCAST Teaching Scale (NCATS) Manual (NCAST, 1994) reports correlations with the child total score of .28 at 1-12 months, .08 at 13-24 months, and .19 at 25-66 months. Tesh and Holditch-Davis (1997) report a .00 correlation coefficient between the NCAST child subscale and the HOME at 3 years of age. The weaker correlations between the HOME and the NCATS child subscale are also predicted from the NCAST system model because the HOME

emphasizes the parent's provision of support for the infant and thus is less dependent on the child's cues or responsiveness to the parent's behavior.

The NCATS shows consistent concurrent and predictive validity with the BSID-II MDI scores in a variety of studies. In terms of concurrent validity, an intervention study conducted by Barnard and others (1985) of 185 multiple risk mothers (low education, medical risk prenatally, and/or low income), showed a positive correlation of .26 between overall scores on the teaching scale at 3 months of age and the 3-month BSID-II MDI scores. Significant relations among the BSID-II MDI and the NCATS individual subscales were also found. At 24 months, the Cognitive Growth Fostering subscale significantly correlated with the BSID-II MDI and PDI (r's = .43 and .47, respectively). The NCATS parent total score was also significantly correlated with measures of mother-child conversation during a snack interaction at ages 13 and 20 months (Morisset, 1990). At 13 and 20 months the NCATS parent total score was significantly related to the proportion of the mother's speech that facilitated language (r's = .31 at 13-months and .49 at 20 months). In fact, the Cognitive Growth Fostering subscale was the NCATS subscale most significantly correlated with the mother's language facilitation at both ages. This subscale assesses the caregiver's provision of cognitive types of experiences during an interaction that encourage and allow the infant to explore their surroundings and measures the mother's vocalizing, talking, and singing to the infant. Research consistently shows that caregivers who talk more to their infants and in a style that encourages reciprocal communication promote the child's language development (Morisset, 1988).

The NCATS total score and subscales are also able to predict later cognitive and language development in a variety of studies involving both low-risk and high-risk infant samples from diverse income and ethnic/racial groups (Barnard, 1997; Morisset, 1990, 1996). One month and 4-month teaching scale (NCATS) scores were significantly predictive of the 36-month expressive language score on the BSID (r's = .71 and .76 respectively). NCATS total scores at 1 year predicted 24-month BSID-II language scores (R = .28), 36-month expressive and receptive language items on the BSID (r's = .51 for auditory items and .31 for verbal items), and 5-year Weschsler Preschool and Primary Scale of Intelligence (WPPSI) scores (r's = .40 for Performance, .50 for Verbal and .50 for total IQ). In an analysis of the CCDP data from samples of high- and low-risk infants, the 2-year NCATS parent score was correlated to the child's 5-year IQ, with correlations ranging from r = .49 to r = .81. For low-risk and preterm samples, the size of the correlation increases over time, whereas for a social risk group it is relatively high at 2 years (on the BSID-II MDI) and remains high at 5 years (on the WPPSI). The parent score on the teaching task appears more strongly related than the child total score, and, with the parent

subscales, the Cognitive Growth Fostering subscale at 3 and 10 months appears the most consistent and strongest predictor of 24-month BSID-II MDI scores (r's = .23 and .37, respectively).

The Responsiveness to Caregiver subscale does not concurrently correlate with scores on the BSID-II (NCAST, 1994), which supports the teaching scale's discriminant validity. Rather than a prediction of cognitive outcomes, the Responsiveness to Caregiver subscale seems more strongly related to the child's socioemotional development. The Responsiveness to Caregiver subscale measures the infant's ability to respond to the caregiver's attempts to communicate and interact. Infants have crucial skills that enable them to maintain relationships, including perceptual abilities such as hearing and seeing, the capacity to look at another for a period of time, the ability to smile, be consoled, adapt their body to holding or movement, and be regular and predictable in responding. Research shows that the absence of these skills by either partner has a major impact on the nature of the caregiver-infant interaction pattern and later socioemotional development (Barnard, et al, 1989).

In a study of the Clinical Nursing Models intervention program, infant attachment security at 13 months measured by the Strange Situation procedure was significantly correlated with the NCATS child total score at 3 months but not at 12 months (r's = .26 and -.13 respectively). It is interesting to note that the predictive validity of the NCATS child subscales was stronger than the 12-month concurrent validity, suggesting that the NCATS is picking up early interactive behaviors that serve as precursors to later attachment security. The lack of concurrent validity may also be a function of the different test situations. In the Strange Situation the infant is under a high degree of distress from the mother's absence whereas in the teaching task there is little or minimal distress and almost no separation distress. Further evidence for this comes from the work of Speiker and Booth (1988) who found that securely attached dyads scored higher on the NCATS compared with avoidant and disorganized dyads. Secure dyads also scored higher on an empirically derived subfactor of the NCAST teaching scale called positive parent-child mutuality.

In sum, there is ample evidence to support the use of the NCAST Teaching Scale (NCATS) in ECLS-B. There are also correlations between NCATS scores and maternal mood and psychosocial functioning, child behavior problems, and parental expectations and beliefs, all of which are being measured in ECLS-B. Finally, the NCATS appears sensitive to change due to interventions and changes in parent's competencies, according to data from Barnard's Clinical Nursing Models study. Thus, the NCATS is a psychometrically sound instrument that takes relatively little time to administer and yields rich descriptive and predictive results.

The NCAST system has a standard training protocol that consists of a manual and several standard training tapes. In addition, reliability is calculated using training tapes that are provided by NCAST and scored at the NCAST office One member of the ECLS-B staff is a certified NCAST trainer and has trained other staff members to be reliable in the coding of the NCAST.

However, it has been decided that the ECLS-B interviewers will not code the NCAST teaching task as it occurs ("live coding"). Instead, the interviewers will simply videotape the mother-child interaction during the teaching task. This video will later be coded by trained NCAST staff in their office. Our pretest experience suggests that the teaching task can be successfully videotaped in less than 3 minutes. We will train our interviewers on the basic principals of the NCATS teaching task, how to help the respondent choose a teaching task, and the best way to film the teaching task itself.

C.2.2.3 Physical Growth Measurements

Recent interest in and concern about the care and education of young children and the early school years reached new heights with the establishment of the National Education Goals Panel. The Goal One Technical Planning Group of the National Education Goals Panel (1993) recommended that school readiness be considered as a multifaceted phenomenon and included the child's physical well-being as a key domain of development. There has also been increased health policy interest in the early years of childhood with the 1997 White House conferences highlighting findings from research on early brain development and out-of-home child care. Physical growth measures, as well as motor development and early health care, are important constructs to assess in this study.

According to the National Education Goals Panel, the child's physical well-being refers to the aspects of a child's health and physical growth, including proper nutrition and health care. Consistent medical and dental care, including immunizations, pediatric checkups, and assessment of physical growth, are important for early detection of potential problems that may pose obstacles to early learning.

One of the most rapid periods of physical growth for children is from birth to age 2, and thus periodic measures of children's length and weight at multiple time points during these ages are essential. Weighing and measuring children are important elements in assessing the nutritional status of a population (United Nations, 1986). By taking accurate measures we can classify children's growth

properly using internationally accepted reference standards and identify children who may be vulnerable to health problems because their physical growth does not match those of their peers.

However, these measures are often not taken in national studies, unless health and nutrition are a focus, and often they are not done with such a young sample. In providing justification for supplemental funding of ECLS-B to include health and physical measures, many National Institutes of Health (NIH) identified the need for: (1) identifying and improving the measurement of basic physical health and functioning in children; (2) evaluating and expanding the use of multiple data collection techniques, including anthropometry, direct physical assessments of health conditions, and medical provider linkages; and (3) adding follow-up questions that will probe the link between children's health conditions and household risk factors.

The 9-month direct infant assessment includes physical measurement of the infant, including weight and length. We propose to adapt the NHANES protocol for these measurements and based on discussions with NHANES researchers at Westat, we estimate a total of 3 minutes will be required for the weighing and measuring. The infant will be measured in a clean diaper. The mother will be asked to remove clothing from the baby during the parent interview (which occurs while she is holding the baby) so that the time required for the measurement does not include dressing and undressing time. (See Appendix B for the protocol of administering the height, weight, head, and arm circumference measurements.)

C.2.3 9-month Interviewer Observation Checklist (IOC)

In order to gain a more thorough understanding of children's home environments, interviewers will complete a brief checklist (Interview Observation Checklist-IOC) based on their observations of the mother-child interaction and the home itself. The checklist allows for additional measures to be collected without adding to the respondents' burden. Further, by including observational items that overlap with items that are asked of parents, we can obtain corroborative evidence for information provided by the parent. The checklist also allows for the collection of important information regarding the child's temperament and possible areas of communication, behavior, or neuromuscular skills that may be key precursors for development lags of potential learning problems.

The IOC consists of the following measures:

1. Eight items taken from the HOME-Short Form (HOME -SF)
2. The BSID-II BRS (30 items)
3. Three items from the Carolina Record of Individual Behavior, developed by the Frank Porter Graham Development Center.

Some other maternal-report items from the HOME-Short Form will be incorporated into the ECLS-B parent interview. The protocol for administering the interviewer observation items is included in Appendix C.

C.2.3.1 The Home Observation for Measurement of the Environment (HOME)

Rationale

Numerous researchers and studies have shown a correlation between proximal home environment variables and children's cognitive, social, and physical development, as well as the extent to which of these variables account for variance in developmental status. It is believed that this correlation does differ across sub-population groups. Researchers also believe that SES, mother's intelligence, and mother's educational achievement may play spurious roles in this correlation.

The predicative value of home environment variables is somewhat controversial. However, one measure of proximal home environment variables that has been used extensively is the HOME (Caldwell and Bradley, 1984). The HOME, and the shorter version, HOME-SF, have been used as both an input measurement to explain other child characteristics, and an individual outcome instrument. It was first developed as a more valid alternative to measures of social class or SES as indicators of the adequacy of the home environment.

The HOME has been used with success in several large-scale studies, including the EICS (Shonkoff, et al., 1992), the NLSY, the Longitudinal Observation and Intervention Study (LOIS), and the NICHD Early Child Care Study. It is also being used in the national evaluation of Early Head Start involving a sample of approximately 3,000 infants across the country.

The advantages of using HOME items in the ECLS-B study is that it does not require extensive interviewer training and it can be used at both the 9- and 18-month time periods.

The HOME Theoretical Approach

In the early 1960s, several ideas and theoretical concepts emerged that fostered the development of the HOME. First, researchers began to question the validity of the existing environmental measures that were being used to test the relationships between environment and development. SES or social class of a child's family was the measure most often used at this time to predict the child's future cognitive development. Unfortunately, this measure did not provide researchers with a precise picture of the child's living conditions, family events, or day-to-day experiences. Other measures were dependent on primarily interview or questionnaire methodologies, whose reliability and precision were questionable.

The second factor that led to the development of the HOME was the rise in popularity of early intervention programs. A measure was needed that could provide a precise portrait of the child's home environment and yet was also easy to use (Bradley and Caldwell, 1984).

The first version of the HOME, originally called the Inventory of Home stimulation or STIM, was developed by Bettye Caldwell and her colleagues at the Syracuse Early Learning Project. Over 200 items were field tested for the first version of the HOME. Based on these field tests, the HOME was reduced to a 72-item scale, and then finally to 45 items (Bradley and Caldwell, 1984).

The HOME, a combination of parent-report and observational items, assesses the quality of cognitive stimulation and the emotional support that the child receives from the family. It allows the researcher to link the quality of the child's home environment to early familial and maternal traits and behaviors.

The instrument contains 45 binary ("yes-no") items organized into 6 subscales designed to assess: (1) the mother's responsivity to the child, (2) the use of punishment and restriction, (3) the physical attributes of the home and neighborhood, (4) availability of toys and other play materials, (5) maternal involvement, and (6) variety in daily stimulation.

Psychometric Properties of the HOME

The original HOME measure, from which both ECLS-B checklist items and several ECLS-B parent-interview items have been taken, has proven to be a reliable measure. Bradley (1981) presents inter-rater reliabilities from six different studies that range from the high .80s to the low .90s. Six-month test-retest subscale correlations ranged from .45 to .87 (Bradley, Caldwell, and Eldardo, 1979), while Yeates et al. (1983) found 12 month test-retest reliabilities from .43 to .68 for infants aged 6 to 42 months. Ramey et al. (1984) found 2-year test reliabilities of .56 and .57. Finally, a high total score reliability of .86 was reported for siblings tested at least 10 months apart (Van Doorninck et al., 1981).

A study by Eldardo, Bradley, and Caldwell (1975) show that the HOME (at ages 6, 12, and 24 months) is moderately correlated with both the BSID-II (at ages 6 and 12 months) and the Stanford-Binet Intelligence Tests (at age 3). The correlations for the 6-month HOME and the 12-month Bayley range form .09 (Responsivity subscale) to .27 (Variety subscale). The correlations for the 12-month HOME and the 12-month Bayley range from .01 (Restriction subscale) to .28 (Play Materials subscale and Involvement subscale). A multiple correlation of r=.40 was found for the six HOME subscales and the 12-month BSID-II MDI.

Other longitudinal research suggests that the HOME is a good predictor of later cognitive, social, and physical development. In a study comparing the predictiveness of the HOME relative to the predictiveness of maternal intelligence for child's intelligence at 2, 3, and 4 years of age, Yeates et al. (1983) found that, although maternal intelligence was initially more predictive, the quality of the home environment was more predictive of cognitive development by age 4. Even when administered as early as 2 months of age, the HOME has been found to be correlated (from .34 to .72) with intelligence tests administered as late as 4½ years old. Researchers also found that the HOME at 1 and 2 years was correlated with academic achievement in the first through fourth grades of school (.33 to .65) (Bee et al., 1982; Bradley and Caldwell, 1976, 1980, 1984; Eldardo, Bradley, and Caldwell, 1985; and Van Doorninck et al., 1981.)

In addition to predicting later cognitive development, the HOME can also be used as a predictor of a variety of developmental risks, including clinical malnutrition, failure to thrive, language delay, developmental delay, and poor academic achievement (Eldardo and Bradley, 1981). Six studies

found relationships between temperamentally difficult infants and decreased stimulation and support in their homes.

The NLSY authors do note that while the HOME consists of a wide range of items that measure the quality of the home environment (family interaction patterns, physical characteristics of the home, and behavioral attributes), significant changes in the family composition, such as divorce, or the birth of a new baby, or a move to a new home, could significantly alter the stability of the measure over time. In the NLSY study, the cross-year correlations are moderately strong. The overall correlation is .54 between 1986 and 1988 and .45 between 1986 and 1990.

C.2.3.2 The BSID-II BRS

Rationale

While the BSID-II Mental and Motor scales provide the researcher and analyst with a detailed picture about infants' development, this picture can be incomplete. The BSID-II BRS presents additional information, with a more subjective viewpoint. Interviewers can contribute their insights on the child's behavior, based on their personal observations throughout the entire interview.

The BRS, which consists of a 30-item Likert-type rating scale, allows the tester to rate by observation the infant's temperament, emotion, and test-taking behavior. The BRS has three factors: orientation/engagement, emotion regulation, and motor quality. The items are scored on the basis of the interviewer's observations and provide an unobtrusive alternative to parental reports of infant temperament. Because it is an observational evaluation of the child's ongoing behavior during the structured test-taking situation, it essentially controls for context when assessing infant temperament.

The BRS is recommended for use in the ECLS-B study as a balance to the parental-report methodology. Although the interviewer will have a chance to directly observe and interact with the infants during the administration of the BSID-II MDI and PDI, the BRS is an opportunity to record interviewer observations in areas where we would otherwise rely solely on parent-reports. In addition, the BRS is applicable for both the 9- and 18-month time periods. Finally, the BRS is easy to train on, and will fit in well with the HOME Checklist discussed above. The BRS and the HOME Checklist can be filled out together, after the interview has been completed.

Psychometric Properties

Three BRS factors will be appropriate for the 9- and 18-month infants we will be assessing.

- Orientation/Engagement: Includes 12 items, ranging from Predominant State to Energy, to Fearfulness. Measures the child's attitude toward approaching or avoiding environmental interactions that are task-related or social in nature.
- Emotional Regulation: Contains 10 items, including Attention to Tasks, and Cooperation. Includes the child's activity, adaptability, persistence, and frustration tolerance.
- Motor Quality. Includes 8 items, including Control of Movement and Frenetic Movement. Assess muscle tone, fine and gross motor control, and the quality of movement.

To determine the content validity of the BRS, BSID-II project staff and subject-matter experts reviewed the items carefully. By comparing the BRS items to relevant literature and other child behavior rating scales, the researchers determined that the BRS assessed the relevant behavioral domains.

The BSID-II researchers also conducted exploratory factor analysis on two samples—a standardization sample and a sample of children from mixed clinical samples. The purpose of this analysis was to determine if the BRS assessed the full range of behaviors likely to be seen in all types of field situations. The three factors listed above were extracted for the 6- to 12-month-old sample, accounting for 45.6 percent of the total variance in the standardization and clinical samples. The three factors listed above were also extracted (although with slightly more items) for the 13- to 42-month-old sample, accounting for 53.5 percent of the variability in the standardization and clinical samples.

The BRS was also compared to external criterion measures. Results indicate that there are low to moderate correlations between the BRS and the MDI and PDI. For 6- to 12-month-olds, the correlations between the three factors ranged from .26 to .46 for the MDI and from .13 to .37 for the PDI. For 13- to 42-month-olds, the correlations ranged from .20 to .34 for the MDI and .18 to .23 for the PDI. The low to moderate correlations suggest that the BRS taps a unique source of variance from the Mental and Motor scales.

The BRS has also been tested to determine its ability to distinguish children with severe impairments from normal children. It was found that children who obtained MDI or PDI scores below 70 (i.e., greater than two standard deviations below the mean) also scored in the Non-Optimal range on the BRS total and factor scores.

C.2.3.3 The ECLS-B Interviewer Checklist

As mentioned earlier, the IOC is comprised of eight observational rating items from the HOME-Short Form, identical to those used in the NLSY, the entire BRS of BSID-II (30 items), and three items from the Carolina Record of Individual Behavior (CRIB). The IOC will be completed after the interviewer has left the respondent's home and will be completed at the 9-month and 18-month data collection points.

The measures selected for the IOC are designed to collect information that complements that obtained through the parent's report and the direct infant assessments. The eight HOME-SF observational items will complement the selected parent-report items that are part of the standard HOME-SF, so that comparisons between multiple data sets will be possible. These items will collect information from the home visitor about the quality of the home learning environment and the nature of the parent-child interactions observed during the home visit. The BRS of the BSID-II provides ratings of the child's temperament and approaches to learning when given the BSID-II tasks to perform. As well, the BRS provides some information about possibly atypical development, such as neuromuscular skill, social interactions, frustration tolerance and affect during the BSID-II tasks. In order to bolster the ability of the BRS to identify possibly early markers of developmental lags or disabling conditions, three items from the CRIB were also selected, upon consultation with experts in the field of early disabilities and special education. Two of the CRIB items assess the child's ability to respond to verbal communication ("Child's Communication") and to become engaged in intentional manipulation of objects ("Object Orientation"). Early lags on these items may signal potential problems for the child by indicating difficulties that prevent normal learning and knowledge acquisition. A third item, "Attention Span" measures the child's degree of persistence in attending to objects, persons or activities, and appears to cover a wider range of potential attention difficulties or skills than a similar item already included in the BRS. The three CRIB items will provide analysts with additional information about potential delay or atypical development by supplementing the observational BRS measures.

C.2.3.4 Parent-Report HOME Items

Selected maternal-report items from the HOME-SF are incorporated throughout the parent-interview component of ECLS-B. These items will be administered along with the other parent-interview questions.

Below are listed ECLS-B parent interview items that were taken from the HOME-SF. Due to client and consultant changes, however, these items are not necessarily worded identically to those in the HOME-SF:

- How often do you get a chance to read stories to or look at picture books with CHILD)? (9 and 18 months)
- About how many children's books are available to (CHILD)? (18 months)
- How often do you get a chance to read stories to or look at picture books with (CHILD)? (18 months)
- About how many cuddly, soft, or role-playing toys does (CHILD) have? (18 months)
- About how many push or pull toys does (CHILD) have? (18 months)
- Children seem to demand attention when their parents are busy, doing housework for example. How often do you talk to (CHILD) while you are working at home? (18 months)
- In the last week, Monday through Friday, how often did at least some of the family eat breakfast together? (18 months)
- In the last week, Monday through Friday, how often did as least some of the family eat the evening meal together? (18 months)
- In the last week, Monday through Friday, how often was the evening meal served at a regular time? (18 months)

C.2.4 9-month Resident Father Self-Administered Questionnaire

Until recently, fathers were often neglected in research on children's well-being. Though that omission is currently being corrected by a profusion of new research on fathers, there are still gaps in our understanding of the role of fathers' in children's lives. The items contained in this Self-Administered

Questionnaire (SAQ) seek to learn more about fathers from the fathers themselves. The 9-month Resident Father Self-administered Questionnaire is in Appendix D.

For most of this century, researchers studying children's development have tended to focus on the role of mothers in children's development. Fathers were assumed to be on the periphery of children's lives and, therefore, of little direct importance to children's development. Recently, however, more and more researchers and policymakers are reaching the conclusions that fathers influence their children's development in a variety of ways (Lamb, 1997; Clinton, 1995). In spite of the increasing awareness that fathers matter, most large national surveys do not gather much information about fathers. We know very little about what fathers think about being fathers or about their relationship with their children. What we do know is often obtained from mothers rather than fathers (Marsiglio and Day, 1997; The Working Group on the Methodology for Studying Fathers, 1997). For many topics, however, fathers would be better providers of information than mothers. For example, attitudes of fathers about being fathers or fathers' perceptions of the amount of time they spend with their children and the types of activities they share with their children would be better gathered from fathers than from mothers.

Activities with Baby (Q1—Q2). Lamb posits three basic types of parental involvement: interaction, in which the parent is actively engaged with the child; accessibility, in which the parent is present but not involved in activities that require direct interaction with the child; and responsibility, in which the parent takes responsibility for the maintenance of the child such as scheduling doctors' visits, clothing the child, and making sure meals are ready (Lamb, 1986). The items in this section provide more information on fathers' involvement in their infants' lives, tapping all three types of parental involvement. Information will be gathered not only on the type of involvement but also on how often fathers engage in different activities with their babies.

Several recent studies have examined the specific influence of father involvement on child outcomes. Children of more involved fathers have been shown to develop more balanced gender expectations and have more positive cognitive and socioemotional outcomes than other children (Coltrane, 1995). In a study that included a sample of low-income, urban African American fathers (or father figures) and their 3-year-old children, fathers' parenting satisfaction, fathers' employment, and fathers' level of nurturance (as measured in videotaped play observation) were associated with better cognitive and language development among children, even after controlling for maternal age and education (Black, Dubowitz, and Starr, 1996). The same study also found that homes were more child-centered when fathers resided in the home with their children.

Prenatal/Neonatal Experiences (ask only of biological fathers) (Q4-Q9). The items in this section provide information about whether the father wanted the child and how involved the father was in the birth process. It is assumed that fathers who are happy to learn that the mother is pregnant and who support the mother during pregnancy and at childbirth will continue to be supportive of the mother and become actively involved with the baby. The active involvement of fathers, in turn, is assumed to lead to greater father-infant attachment, greater child well-being, and a more harmonious relationship with the mother.

Among mothers, unwanted pregnancy is associated with inadequate prenatal care, more risk-taking behavior during pregnancy (such as smoking cigarettes or drinking alcohol), and a higher incidence of infant mortality (Moore et al., 1997). Unwantedness is also associated with poor child health, lower scores on verbal development tests for preschool children, and higher levels of abuse and neglect (Moore et al., 1997). One study has found that mothers with unwanted births spend less of their free time with their children and are more likely to spank or slap their children (Barber, Axinn, & Thornton, 1997). Almost no research has examined the effect on children of having been unwanted by their fathers. The research that exists suggests that unwanted pregnancies are associated with greater marital conflict during and after pregnancy and an increased likelihood of the father abandoning the family. A reasonable hypothesis is that if the father remains in the family, he may, like mothers with unwanted children, be more punitive with, show less warmth towards, and be more neglectful of the unwanted child. He may also be less likely to assume responsibility for child rearing tasks or to assist the mother in such tasks.

Expectations for Child Development (Q10-Q11). Fathers' knowledge about child development may be related to their expectations for their own child's development. As noted earlier, researchers have found that greater parental knowledge about child development is associated with positive parenting practices and child outcomes. Fathers will be asked the same set of items as mothers about their expectations for child development.

Feelings About Being a Father (Q3, Q12-Q14). These items provide information about fathers' attitudes toward being fathers and their opinions about what activities are important for fathers to do. Some of the items are indicators of fathers' pride in and infatuation with their babies and about the extent to which they enjoy holding and cuddling their babies. It is assumed that the more fathers are proud of their role and infatuated with their babies, the more likely they will be to be involved with their

infants. Similarly, it is likely that fathers who think that fatherhood is a highly rewarding experience will be more involved in their children's lives than fathers who do not feel this way. At least one study has shown that the more fathers value the role of father, the more likely they are to be involved with their infants (Parke, 1995). Involvement in their infants' lives, in turn, is likely to lead to stronger attachments between them and their babies.

Separations from Child and Duration (Q15—Q19). Fathers who are separated from their infants for extended periods of time may have more difficulty establishing strong father-infant attachments. Studies suggest that fathers who spend more time caring for their young children may develop stronger attachments to them (Grossman, Pollack, and Golding 1988). Prolonged absences may interrupt this process. Fathers who have been away for extended periods may also relinquish many of the tasks associated with childrearing to the mothers who will have assumed such tasks in their absence. If father-infant attachments are weakened by extended periods of separation, the effect could reverberate into future relationships between the child and the father.

Fathers' Influence in Child Care Decisions (Q20-Q23). Relatively little is known about the influence fathers have in determining whether and when children will enter nonparental child care or early childhood programs. These questions will be used to help provide more information on this topic.

Relationship with Wife/Partner (Q24-Q27). Marital quality affects children's well-being in several ways. It can affect the parents' mental well-being and alter the way in which the parents interact with their children and with each other (Cummings and O'Reilly, 1997). On the positive side, high marital quality is associated with parents having a more favorable attitude about being parents, with parents using more complex sentence structures in speaking to their children, and greater child attachment and security (Cummings and O'Reilly, 1997; Pratt, Kerig, Cowan, & Cowan, 1992; Goldberg & Easterbrooks, 1984; Howes & Markman, 1984). On the negative side, marital conflict contributes to parental stress, lack of parental warmth, inconsistent childrearing, and low parental involvement all of which have negative effects on children's well-being (Cummings and O'Reilly, 1997; Holden and Ritchie, 1991; Hetherington and Clingempeel, 1992). Moreover, father-child relationships appear to suffer more than mother-child relationships when there is marital conflict in the family (Cummings and O'Reilly, 1997).

Brief Marital and Fertility History (Q28—Q33). Number of marriages: In general, persons who have previously been married experience slightly higher rates of marital disruption than those who are married for the first time. Cohabiting unions are especially unstable.

Number of biological children and when first child was born. Social scientists have long viewed mother's childbearing history as critical to understanding children's well-being. The age at which mothers begin childbearing, the number of children that they bear, and the closeness with which their children are spaced all influence not only how the baby born, but how other children in the family fare. Less is known about how fathers' fertility history influences children's well-being. Fathers with children by other mothers may have obligations to these other children that constrain the financial contributions they make to and the time they spend with their resident children. Moreover, children outside the household can introduce another layer of relationships that may affect the dynamics between fathers and their current partners and between both parents and their children.

Background Information (Q34-Q43). This section collects background information about the fathers in the study. Fathers are asked to report on their birth date, country of origin, citizenship status, and English language fluency. Children of immigrants are expected to account for more than half of the growth in the school-aged population between 1990 and 2010 (Passel and Fix, 1995). In spite of their growing numbers, relatively little is known about their educational experiences (Portes and MacLeod, 1996). Information about young children of immigrants is particularly scarce (Board on Children and Families, 1995). The few studies that exist, however, show that students' proficiency in English is directly related to their parents' English proficiency (Moore et al., 1997).

Education, Employment, and Training (Q44-Q66). The educational attainment of parents measures knowledge gained as a result of formal school and reflects "status origins" of the family. Parental attainment levels have a strong influence on the child's odds of attaining a given level of schooling, for example, completing high school or college (Hauser & Mossel, 1985; Bowles & Gintis, 1976). Possible mechanisms for the effect of parental education on child outcomes are inherited ability, access to educational resources, differences in the value the parent places on education for the child, and ascriptive biases in both the formal organization of instruction and informal social relationships within the school setting (Bidwell & Friedkin, 1988).

The items on school experiences including grades in high school, type of high school program, math courses taken, and whether the father ever required special help in school for reading

provide indirect measures of the father's cognitive attainment and learning difficulties. Cognitive attainment measures knowledge and ability rather than years of schooling. In a study of young mothers, Moore and Snyder found that even after controlling for parental education, parental cognitive attainment is associated with children's cognitive and developmental outcomes (Moore & Snyder, 1991). Obtaining information about learning disabilities and difficulties is also important because many specific learning disabilities may have a genetic or familial component. In particular, having a learning disabled father has implications for sons (Moore et al., 1997).

Father's employment status, occupation, and training are important for several reasons. First, they are highly correlated with household income. Second, the quality of stimulation that parents provide their infants and preschool children is positively associated with parental occupation and education (Gottfried, 1984). Third, father's employment and occupation are linked to his self-esteem and mental well-being. In large part because of society's emphasis on the provider role of fathers, unemployment often negatively affects the relationship between fathers and their children. Unemployed fathers are more likely to leave or limit their involvement with their families (Elder, G.H. & A. Caspi, 1988). Among employed fathers, their type of employment affects their interaction with their wives and children. Repetti (1989) found that fathers who have highly stressful occupations tend to withdraw from their wives and to provide little childrearing support. Compared to fathers with less stressful jobs, these fathers are also more likely to withdraw from their children and are more likely to exhibit anger and impatience during their interactions with their children. On the other hand, fathers engaged in complex jobs associated with high levels of challenge and autonomy tend to discipline less harshly and spend more time helping their children, particularly their sons, develop skills (Greenberger, O'Neil, & Nagel, 1994). Overall, daily participation in child care is high among fathers in lower-level white-collar jobs and professional jobs, and lower among self-employed fathers and fathers in blue-collar jobs and middle or high management positions (Gerson, 1993).

Health and Well-being (Q67-Q80). The health section obtains information on fathers' height and weight, overall health, and presence of health conditions that limit employment or learning. Fathers' height and weight are correlated with the birth weight and length of their children and with the children's physical growth. Large fathers will tend to have larger babies than will small fathers. Beyond the physical size of parents, parents' overall health can affect the health of children and has economic consequences for the families (Zill, forthcoming). Ill health in parents is a source of family stress and may even lead to family disruption. Parents who are physically ill are less likely to have the energy, attentiveness, patience, and good humor needed to take care of young children (Zill, forthcoming).

The short version of the CES-D depression scale will be used to assess fathers' mental health. Depression is defined as a negative mood state so extreme that it interferes with daily functioning and productive activity. Parents who are depressed or highly stressed are less likely to provide emotional support to their children and are more likely to employ harsh disciplinary practices (Puckering, 1989; Richters & Pellegrini, 1989; Moore et al., 1995). In their interactions with preschool children, depressed mothers were more critical, less responsive, and less active (McLoyd & Wilson, 1991). Children of depressed parents display higher levels of both externalizing (e.g., aggressive) and internalizing (e.g., anxious, depressed) behavior problems, often have deficits in social and academic competence, and are in poorer physical health than children of nondepressed parents (Downey & Coyne, 1990).

Children's exposure to cigarette smoking is linked to such health problems as increased ear infections, asthma, and other respiratory problems. Father's use of alcohol and illicit substances such as marijuana and cocaine can affect his ability to effectively parent.

Stress due to negative life circumstances and events has been found to be related to poorer caregiving behavior (Pianta, Egeland, & Sroufe, 1990) and higher levels of depressive symptoms (Hall, Williams, & Greenberg, 1985). Parents in families under strain from multiple difficulties are likely to be less successful as parents since parental stress has been found to be associated with socioemotional, behavioral, and cognitive difficulties in children (Pianta, Egeland, & Sroufe, 1990). In a similar fashion, it is expected that fathers who have experienced multiple stressful life events will be less able to successfully fill their role as fathers.

Illnesses such as schizophrenia, bipolar disorders, depression, alcoholism, and drug abuse problems have a genetic component. Thus, they tend to run in families. Such a history, of course, may have important consequences for children. The items in this section ask fathers whether any of their blood relatives, such as mothers, fathers, siblings, aunts, uncles, cousins, or grandparents, have had these types of health problems.

Living Arrangements When Growing Up (Q81-Q88). Parents own families of origin have an important influence on the type of parents that they become and the stability of the families that they form. Adults who grew up in single-parent families are more likely to divorce than are adults who grew up in stable two-parent families. Similarly, adults who came from families that experienced economic difficulties may also encounter such difficulties when they form their own families.

Education of and Closeness to Own Parents (Q89-Q92). Studies suggest that nurturant fathers became that way because of the way in which they themselves were fathered, though some became that way to compensate for deficits in fathering that they received while they were growing up (Snarey, 1993). The first path toward nurturant fatherhood is often referred to as modeling good father behavior, while the second is described as reworking negative experiences (Snarey, 1993). It is expected that fathers who feel close to their own fathers and mothers will be more involved and nurturing fathers than men who are more distant from their own parents. The evidence for reworking poor fathering, however, suggests, that men who do not feel close to their own fathers may also be more nurturant than men who give a more neutral assessment of their relationships with their own fathers.

Beyond modeling or reworking childhood experiences, families of origin are important for the emotional and financial support they provide to their children and grandchildren (Cherlin and Furstenberg, 1986). The availability of a variety of social supports to parents is associated with the security of infant-parent attachment (Crockenberg, 1981). It is assumed that fathers who have strong relationships with their families of origin will be less likely to be overwhelmed by the stresses and strains of living and thus will be better able to fill the father role.

Religion and Social Connectedness (Q93—Q96). Parents' religiosity, including high levels of religious involvement and commitment, is associated with higher levels of marital quality and spousal support, and lower levels of conflict, all of which are associated with better parenting (Brody, Stoneman, Flor, and McCrary, 1994). Greater parental religiosity is also related to more cohesive family relationships, lower levels of interparental conflict, and fewer externalizing and internalizing behaviors in children (Brody, Stoneman, and Flor, 1996).

Stressful life events, the stresses of daily living, and the stresses of parenting can be mitigated by a supportive social network. Parents with more ties to their neighbors and the larger community are more apt to have a strong social network in place than families with fewer ties. Affiliation with a religious community is one important tie. Other important ties include belonging to other community organizations, volunteering, and getting together with friends or neighbors.

C.2.5 Nonresident Father Interview

The Self-Administered Father Questionnaire discussed above will partially fill the existing gap in our knowledge of fathers and their relationships with their children. However, many fathers do not live with their children. Nearly one-third of all children are born outside of marriage, and the majority of these children do not live with their fathers. The high incidence of divorce and separation in this country leads to more children living apart from their fathers. Although many fathers who do live with their children lose contact with them over time and tend to play a smaller role in their children's lives than do resident fathers, a significant proportion of nonresident fathers do remain involved. Moreover, their involvement is important to children's lives (Amato, 1998; Nord, Brimhall, and West, 1998). For both policy reasons and to understand children's development, it is important to learn more about fathers who live apart from their children. The long version and the short version of the Nonresident Father Instrument is included in Appendix E.

Activities with Baby. See Father SAQ justification. Items will remain essentially the same. There will be a few additional ones to cover things that are more appropriate for nonresident fathers. For example, the nonresident father questionnaire includes questions about how far away the father lives from the child, how long it has been since he last saw the child, how often he sees the child, and how often he talks with the child's mother about the child.

Prenatal/Neonatal Experiences. See Father SAQ justification.

Feelings About Being a Father. See Father SAQ justification.

Relationship with Child's Mother. Mothers can act as gatekeepers, preventing fathers' access to their children. Similarly, if the relationship is highly conflicted, fathers may be less willing to spend time with the child or to provide support for the child. In order to understand fathers' involvement in their children's lives, it is important to know about how they get along with their former wives/partners. Fathers who have remarried may be discouraged by their current spouse to remain involved in the lives of children from a previous relationship. Thus, we also ask nonresident fathers about their current marital status.

Fertility History and Child Support. See Father SAQ for justification of number of biological children has fathered and when first child was born. Nonresident fathers will also be asked

about child support payments, both formal and informal (such as buying clothes or diapers for child, or giving the child's mother extra money to help out). Several studies have shown a link between receipt of child support and educational attainment and academic achievement (Knox and Bane, 1994; Baydar and Brooks-Gunn, 1994). Payment of child support also appears to be associated with a lower level of school behavior problems (McLanahan et al., 1994). Most studies focus on formal child support payments, but fathers may also provide support informally. One study found that among mothers with no child support awards, 24 percent of divorced or separated mothers and 47 percent of mothers of children born outside of marriage received some monetary support from fathers (Argys, Peters, Brooks-Gunn, and Smith, 1996). Other studies have found that fathers, particularly those who are economically disadvantaged and therefore can't make regular support payments, contribute to their children in other ways such as buying food, clothing, or diapers (Sullivan, 1993; Achatz and MacAllum, 1994).

Background Information. See Father SAQ justification.

Education, Employment, and Training. See Father SAQ justification.

Health and Well-Being. See Father SAQ justification.

Living Arrangements When Growing Up. See Father SAQ justification.

Education and Closeness to Own Parents. See Father SAQ justification.

Religion and Social Connectedness. See Father SAQ justification.

Living arrangements and household income. Fathers with stable living arrangements are likely to be better able to remain in contact with their children and may even be able to provide child care assistance and emergency care assistance to the mothers. The questions in this section obtain information on the type of housing the father lives in, whether it is subsidized housing, the number of other persons living with him, and overall household income.

C.3 18-month Home Visit

C.3.1 Justification for 18-month Parent Interview[1]

The 18-month parent interview consists of 24 sections collecting updated information about the household composition and the child's parents' employment and education, the child's health, growth, and development, and environmental factors that predict children's outcomes such as SES, educational activities, and nonparental child care. Appendix F includes a detailed description of the items in the 18-month parent interview and the 18-month parent instrument.

Section B – Update Household Composition

Information about household composition will be kept current for several reasons, including the need to define familial SES, the need to construct poverty groups, and the value of the household as a social support network. A roster of all household members who are currently residing with the child will be obtained in Section B.

Section C – Child's Development

Information about the child's achievement of key developmental milestones will be obtained at 18 months in order to assess the child's growth during the intervening period. Several items from the Minnesota Child Development Inventory (MN-CDI) were selected because they are developmentally appropriate for 18-month-olds. Items C1 to C4 include how old the child was when he/she: (1) took his/her first steps; (2) started saying first words; (3) started playing with other children; and (4) started feeding him/herself. The transition from preverbal to verbal communication is a singularly critical developmental milestone for children. At 18 months, the age at which children are typically making this transition, early communication (Items C5 to C7) will be measured by the expressive language and language comprehension subscales of the MN-CDI (Ireton, 1992) and by the "Early Words" and "Words

[1] In preparing the justification of the proposed content for the Parent Interview, we have made free use of a report that Kristin Moore and others at Child Trends produced for NCES entitled *Rationales for Proposed Birth Cohort Study*. We wish to acknowledge the tremendous amount of work that they invested in preparing that useful report.

Children Use" subscales of the MacArthur Communication Development Inventory (M-CDI; Fenson, Dale, Reznick, Bates, Thal, and Pethick, 1994).

Attachment (Items C8 to C12), the child's formation of an enduring affective bond with the primary caregiver, is an important achievement in the child's socioemotional development and by 18 months the child's organization with respect to his/her relationships with key parental caregivers is relatively stable. To assess the child's attachment, we propose adapting two of the rating scales used in the NICHD study of the quality of early child care that assess the child's behavior in separations from and reunions with the parent.[2] The first rating scale, Caregiver Ratings of Parent-Child Behaviors When Parent Leaves, asks the parent to describe the child's behavior at times of separation from the parent. The second rating scale, Caregiver Ratings of Parent-Child Behaviors When Parent Returns, and asks the parent to describe the child's behaviors upon reunion with the parent. To make these scales applicable to children who are not yet in formal alternate child care, the questions were changed to include any separation from the parent lasting over an hour when another adult is put in charge of the child. In addition, due to time constraints, a short set of items were selected from the larger sets on the basis of their ability to discriminate securely, anxiously and avoidantly attached children.

Sections D and E – Update Mother's and Resident Father's Education, Employment and Income

Parental education predicts positive outcomes for children in many aspects of child development. In addition, parental employment determines the availability of material and nonmaterial resources for the child. Less is known about the direct effects of father's education and employment on children's development beyond their relationship to household income. It is generally known, however, that maternal education is one of the strongest predictors of positive child outcomes. It is imperative, therefore, that questions be included that ask about parental education, occupation, and income. This information is obtained for both the mother and the father in parallel questions in Sections D and E.

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[2] Data in support of these instruments have not yet been published. We are, however, in contact with project members who have informed us that preliminary results should be available in the coming months.

Section F – Home Educational Activities and Environment

An environment that is rich in stimulating materials positively influences cognitive development and subsequent achievements of children. In addition to the beneficial effects of joint parent-child book reading, there is also evidence that parents who read more for themselves tend to have children who read at earlier ages (Teale, 1984). In addition to verbal interaction, engaging young children in shared activities, such as going shopping or to a zoo, is another form of cognitive stimulation for children. This section includes a collection of questions that obtain information about the family literacy environment and familial engagement in stimulating activities. In addition, it is necessary to "child proof" the home as much as possible to allow the child to explore the environment safely. Therefore, Item F14 asks about a number of safety practices that may be followed in the home.

Section G – Expectations for Child Development

Items G1 and G2 obtain information about parental knowledge about child development, which has implications for individual child development. In general, knowledge of child development affects parents' child rearing practices, for example by influencing how parents structure their interactions with their children as well as how they organize the child's environment. Further, parents' expectations for their children's school performance and their ideas about children's ability (Item G3) are also powerful predictors of children's ideas about their own academic ability in elementary grades (Entwisle & Baker, 1983; Parsons, Adler, & Kaczala, 1982). This sections includes sets of questions that ask about parental knowledge of child development and aspirations for children. Because these may be affected by the child's rate and level of development and by family experiences, it is important to measure aspirations and expectations over time to allow comparison with 9-month responses.

Section H – Marriages and Partner Relationships

Because martial relationships and structure so strongly influence child development and outcomes, we will update the martial history data we gathered in the 9-month interview. Questions H1 to H9 ask about the respondent's current marriage or relationship, as well as marital happiness and conflict.

Section I-L – Child Care Arrangements

With the increase in children in substitute care has come increased debate about the consequences for various child outcome measures. The complexity of children's child care arrangements, the variability of the characteristics of the care, and the fluidity with which children pass from one arrangement to the other are important information that must be captured. Therefore, Sections I-L collect basic information from the parent about the child's nonparental care arrangements, including the number of arrangements the child currently has, the adult: child ratio, the number of children in the group, the languages spoken, etc. Because the child care interview occurs at 18-months, we also ask for the child care provider's name and address.

Section M – Child Health

Health (Items M9 to M33, M38 to M41) plays a pivotal role in the lives of children. In the infancy and toddler period, the child's health status depends on a number of parental and community factors. One way parents contribute to children's well-being is by insuring that the child has adequate nutritional intake. Adequate nutrition is a prerequisite for maintaining children's physical well-being. A series of questions (Items M1 to M8) obtain information about basic issues in children's early nutrition and eating habits. Parents also contribute to children's health and well-being by securing adequate health care for children, usually through the obtainment of health insurance coverage. A series of questions obtain information about the child's health, health insurance coverage and whether the child was unable to receive care due to a lack of insurance (Items M34 to M43, M47).

Section N – Family Health

Parenting resources can be limited. The presence of another child with a disability in the family reduces the amount of parenting resources available to the other child(ren). Therefore the parent is asked to update the presence of any household members with disabilities in Items N1 and N2. Maternal health status (Items N2 to N5) also contributes to the parenting resources that are available to the child. The extent of limitations to the mother's activities due to the presence of maternal health problems is assessed in a set of three questions. Items N6 to N12 ask about maternal engagement in behaviors that are considered health risks, such as smoking and drinking. According to Shonkoff (1992), maternal

depression has important implications for child outcomes, and Items N13 to N45 the mother about her past history with depression and her current feelings and behaviors that may indicate depression. Finally, information about the health of close family members is obtained in items N46 and N47.

Section O – Household Food Sufficiency

Adequate nutrition is critical to physical well-being. Section O consists of 16 items that were provided by USDA and ask about the adequacy of the family's food sufficiency, with particular attention paid to the nutritional intake of the child.

Section P – Community Support

Community support may influence child outcomes by supporting parenting practices and by providing enriching experienced for the child. Support may be obtained from count centers, community action groups and Neighborhood Watch programs. Item P1 asks about whether the family has received any services from various community agencies, including job training, education assistance, utilities assistance, parent education, etc.

Section Q – Neighborhood Quality/Safety

The neighborhood can be a source of social support or a source of stress and potential danger for the family. For example, substandard housing is associated with infant death. And neighborhoods differ greatly in the degree of safety for young children. Motor vehicle accidents are a leading cause of death for young children. To control for housing quality, the parent is asked about the quality of, and satisfaction, with current housing, and perceptions of neighborhood quality, and the extent of the parental social network. To control for residential stability, the parent is asked how many different places the family has lived and whether residential instability has resulted in extended separations of the child from the parent.

Section R – Parenting Behavior and Attitudes

Affectionate behavior by parents is associated with several positive outcomes for toddlers, including a secure child-mother attachment relationship (Ainsworth, Blehar, Waters, & Wall, 1978). Sensitivity and responsiveness to toddlers' signals is also associated with positive outcomes for children. Negative parenting practices are associated with poor outcomes for children in both the cognitive and social domains. Section R includes several questions about child rearing practices that were adapted from the Block (1965) Child Rearing Practices Report. A shortened version of the CRPR assesses child-rearing patterns and is divided into two subscales: (1) authoritarian parenting, which involved the frequent use of physical punishment, verbal reprimands, prohibitions, etc; and (2) authoritative parenting, which assesses emphasis on inductive methods, reasoning with the child, appreciation of the child's accomplishments, the fostering of individuality of the child, and encouragement of open communication between parent and child. Twelve items (Item R5) were selected for inclusion in ECLS-B, 5 assessing authoritarian control, 4 items assessing authoritative parenting, and 3 items that assess adherence to rules.

Section S – Social Support

A supportive social network has been found to affect the quality of parenting provided to the child as well as affecting the child's security of attachment (Belsky & Isabella, 1988; Goldberg & Easterbrook, 1984; Isabella & Belsky, 1985). Therefore this section includes a series of questions that ask about parental sources of support when faced with emotional problems, financial problems, parenting problems, and in cases of emergency.

Section T – Family Routines

Family routines and the regularity of family life provide a predictable structure to a child's day and are associated with positive educational and behavior outcomes in children. To examine the contribution of predictable family daily routines to children's later cognitive competence, this section asks the primary caregiver to report about the child's daily mealtime and bedtime routines, including the timing of the meal, who is present, how often the family eats together, etc. These questions are included at this data collection point in order to capture the increased participation of the child in these daily routines.

Section U – Biological Father's Information

According to Lamb (1986), fathers contribute to their children's development in three ways. One is by engaging in mutual interactions with the child. Another is by simply being accessible to the child. The third is by accepting responsibility for the care of the child. The father's ability to accept responsibility for caring for the child and maintaining the child's well-being would be affected by the father's employment status collected in section E. The extent of the father's actual responsibility for the child's care is assessed in a series of questions that ask whether the father is involved in caring for the child and whether the father has legally agreed to provide child support and, if so, what the financial arrangement is.

Section V – Welfare and Other Public Assistance

Receipt of public assistance is important to include because it reflects a serious level of poverty and because the status of receipt may change over time, particularly with current emphases on welfare reform. Because of the pervasive effects of poverty and because of the potential for public assistance to mitigate these negative effects, a set of questions ask the parent about the receipt of such assistance as TANF, WIC, and Medicaid.

Section W – Household Income

There are many ways in which parental income level may affect the attainments, health, and behavior of children (Children's Defense Fund, 1994; Duncan & Brooks-Gunn, 1997; Hill & Sandfort, 1995; Huston, 1991; Korbin, 1992). Family income can affect children because money can be used to buy things that promote optimal growth and development. Lack of resources to purchase toys or good quality child care may mean that low-income children do not have as many stimulating experiences as do children in more affluent families. Stressful lives and less positive emotional health may themselves influence the day-to-day interactions between parents and children. So, for example, low-income parents may exhibit more inconsistent or harsh behavior with their children, or they may be less emotionally available for their children. Therefore, household income is a critical datum that must be obtained.

C.3.2 18-month Direct Child Assessment

Please refer to the 9-month justifications (Section C.2.2.) of the BSID-II, the NCATS, and the Physical Growth Measurements. In addition to these constructs, we propose to measure attachment security using the Attachment Q-Sort during the 18-month direct assessment. As stated below, attachment security is an important precursor to socioemotional development. The protocol for the 18-month direct child assessments is included in Appendix B.

C.3.2.1 Attachment Q-Sort

Westat's approach to instrument development for ECLS-B has been to assess comprehensive aspects of children's early growth and development using state-of-the-art psychometrically sound measurement methods that, to the extent possible, involve multiple sources (parents, child care providers and interviewer/observers). We also place a premium on balancing the scientific rigor of the methods with budgetary, logistic and respondent burden constraints.

In this study, children's health and development comprise key dependent variables, against which the predictive value of a large number of home environment, child care, parenting, family background, and community factors will be tested. Within the broad scope of children's health and development, we have been following a "track" in the measurement plan that aims to comprehensively assess five key aspects, one of which is social-emotional development.

At the 18-month period, one of the best indicators of the child's social-emotional development is attachment, and attachment theory has become the dominant paradigm for capturing young children's early social development. It also fits well with the use of the NCAST which allows measurement of parent-child interaction variables that are precursors to both attachment formation and language development and the other measurement procedures already proposed for ECLS-B (i.e. the BSID-II, temperament measures, expressive and receptive language). Because ECLS-B is the first national study to follow children from birth to school age, the addition of an in-depth measure of attachment would greatly enhance the validity of the data and the usefulness of the findings.

The revised study design which specifies a second in-person home visit when the children reach 18 months of age (and deleting the two telephone interviews at 12- and 18-months) presents an opportunity for including a valid and reliable assessment of infant attachment. The formation of secure attachments with caregivers has become recognized as a hallmark of socioemotional growth and development (Easterbrooks and Resnick, 1988). Many research studies, including large-scale national studies such as the Early Head Start national evaluation, the Comprehensive Child Care Development Project, and the NICHD Early Child Care Study employ measures of attachment spanning the age range of 12-months through 3 years.

There is good reason to use a measure of attachment. Security of attachment in the first two years has been systematically related to variations in maternal caregiving behavior. Secure attachment is related to higher cognitive and social functioning, higher levels of self-esteem, better peer skills and greater 'ego-resilience' during toddlerhood. Moreover, attachment classifications of infants are consistently correlated with maternal responsiveness, competence and maternal self-confidence. Attachment security has also been linked to more positive marital adjustment, and other qualities of the marital relationship, and to levels of social support provided to the parent by family members and friends. Thus, children's attachment seems not just an important precursor to the child's later social-emotional development, but it is a marker of factors operating within and external to the parent-child relationship that explain individual differences in growth trajectories.

The most well known measure of attachment at the 12-18 month age range is the Strange Situation. This assessment tool was developed for use initially in a longitudinal study of the infant-mother relationship and has been reliably used from 12 to 18 months of age. While the Strange Situation was developed from extensive home-based observation, it is primarily a laboratory-based instrument and may not be suitable for in-home assessments in a large, national study.

The Attachment Q-Sort procedure was developed as an economical alternative to the Strange Situation to describe attachment security, dependency and sociability of children between 12-months and 5 years of age who are observed in the home. Its advantages include allowing for the study of larger samples in naturalistic settings, keeping the observers blind to the constructs that are being assessed, and lending itself to a wide array of quantitative analytic techniques (Waters and Deane, 1985). It seems particularly valuable in studying social development across a variety of cultures including children from China, Colombia, Germany, Israel, Japan, Norway and the United States (Posada, Gao, et al, 1995). It has also been applied in both live and videotaped assessments with equally reliable results and it can be

done by parents trained in the Q-Sort procedure, or by outside observers. In one study, there were marked similarities in the Q-set scores for sites using different observational methods (live vs. videotape), for children from different cultures (American and French-Canadian), and for children ranging in age from 18 to 36 months (Strayer, Verissimo, Vaughn, and Howes, 1995).

The attachment Q-Sort has been used in a large number of studies, including the NICHD Early Child Care Study. Maternal-completed Q-Sorts were related in ways predicted by attachment theory to Strange Situation classifications (Vaughn and Waters, 1990; Howes and Hamilton, 1992; Bosso, Corter and Abramovitch, 1990), levels of parenting stress (Jarvis and Creasey, 1991; Teti et al, 1991), quality of parent-child relationships (Teti et al, 1991), marital satisfaction (Goldberg and Easterbrooks, 1984; Howes and Markman, 1989), and the child's relationships with younger siblings (Bosso et al, 1990). There have been a number of studies supporting the validity of the attachment Q-Sort when used as either an observer-based or parent-completed measure. Researchers have achieved good results using relatively untrained observers, including the child's parents as observers and reporters of the child's secure-base behavior (Posada, Gao, et al, 1995). Recent reports from Posada and others suggest that the Q-set items do not require as much instruction as originally envisioned and that they still provide reliable indicators of attachment-related behavior. However, Teti and McGourty (1994) caution that observers must be confident that they obtained a sufficiently varied and large sample of the parent-child behavior, and mothers must be carefully trained. Nevertheless, they reported a high level of agreement between observations of mothers and trained observers. Thus, the wide age range that the measure can accommodate as well as its utility and robustness in different observational contexts and cultures makes it uniquely compatible with the goals and direction of ECLS-B.

C.3.3 18-month IOC

The 18-month IOC measures are identical to the 9-month IOC items, described in Section C.2.3. The protocol for the interviewer observations is included in Appendix C.

C.4 18-month Child Care Provider Telephone Interview

The 18-month child care provider telephone interview will be administered to one non-parental child care provider of the 18-month old child. It is important to identify which provider among

possibly several are providing the most amount of care to the child, and it is also important to identify the type of child care arrangement the child is in, because both these factors have been identified in previous research as important variables affecting the child's well-being and experiences in alternate child care. It is also important to identify the type of child care arrangement in order for the telephone interviewer to know the respondent who will be contacted. As mentioned earlier, when there is a center-based arrangement, there is a brief interview of the child care center director, followed by an interview of the person who is most in charge of the target child at the center. In all other arrangements, we interview only the direct child care provider who spends the most time with the child.

There are four basic types of child care arrangements commonly available to parents, and child care providers from all four arrangements will be asked to participate in the telephone interview. The definition of the four types is based on the 1995 National Household Education Survey on the care and educational experiences of young children titled "Child Care and Early Education Program Participation of Infants, Toddlers and Preschoolers" (NCES 95-824, 1996).

The four basic types of child care are known as: center-based care, family day care, in-home care, and relative care. Generally, **center-based care** provides children with care and education in a nonresidential setting such as day care centers. A more elaborated definition of center-based care comes from the 1990 National Child Care Survey as follows: "Established settings where children are cared for in a group away from their homes for all or part of the day" (NCCS, 1990, pp. 442).

When supplemental child care is provided in home-based settings, it is important to distinguish between care provided in the child's own home or in the home of someone else, and whether the care is provided by a relative of the child (other than the child's own parents) or by a nonrelative. These distinctions determine which of the three other types of care arrangements the child may be in at the time of the 18-month home visit. Care provided by a nonrelative in the caregiver's home is commonly called **family day care** (NCES 95-824, 1996). The 1990 National Child Care Survey defines family day care as: "A private home where an adult cares for children from infancy through school age on a regular basis." Further, the 1990 National Child Care Survey also indicates that the care is provided at the home of the caregiver and not in the child's own home. Thus, if the care is provided in the child's own home, the type of arrangement would not be considered family day care and must fall within the remaining two categories: relative care and in-home care. According to the 1996 National Household Education Survey, **relative care** is defined as care provided by a relative other than the child's parents, in the child's own home. This is usually care by a grandmother, aunt, cousin, or other relative. Finally, if the care is

provided by a non-relative in the child's own home, such as by a part-time or live-in nanny, the care is called **in-home child care**.

In order to accurately classify the type of care provided by the child care provider, we ask the parent a number of questions regarding the location of the care, whether other children are present, and who provides the care. To make sure we have arrived at a correct classification, we also use information given by the child care provider during the first part of the interview. In this way, we can ensure that the type of child care arrangement is properly classified. As well, we try not to rely on the parent's report of the type of child care arrangement, because often parents do not know the distinctions between types of arrangements very well, or may leave out important information regarding the type of arrangement the child is currently experiencing.

Section A – Introduction

This section verifies the information about caregiving arrangements that was collected during the 18-month parent interview as well as verifying the identity of the child's primary caregiver, type of care, and the name of the center's director.

Section B – Center Information

Questions in Section B attempt to capture the variables that have been found in previous surveys to influence child care quality. These variables include the type and location of care, i.e., whether center-based or family-based; the adult-to-child ratio; the number of children cared for, which indicates opportunity for contact with other children and for group activities; the quality of the caregiver's interaction with the child; caregiver training and experience; and the child-centeredness of the environment. Information is also obtained about whether the child care is accredited or licensed, for-profit, independent, religiously affiliated, etc. In addition, in the case of paid care, information about the cost of child care is obtained because it has been found to be associated with quality care.

Section C – Staffing

This section obtains information from the center director about staffing issues, such as the size of the staff, number of full- and part-time staff, and the rate of staff turnover. The number of children cared for and the adult-to-child ratio are important variables that are associated with quality: a large group size and a low adult-to-child ratio have been associated with several negative outcomes for children. As well, a high staff turnover indicates instability of care over time and has been associated with several negative outcomes for children's cognitive and socioemotional development. Instability of care can also occur if it is the center's policy to routinely change caregivers (for example, when a child reaches a predetermined age or has achieved an important developmental milestone, such as toilet training) or to keep the same child(ren) with the same caregiver for the entire duration of care. Therefore question C6 asks about the center's policy about continuity of care.

Section D – Center Services

Item D1, Health and Developmental Screenings, obtains information about the kinds of services, if any, the center provides for its children and families. The services listed are among those that ensure the physical, emotional and cognitive development of children, all of which are important predictors of later child development outcomes.

Section E – Transition to Caregiver

The items in this section simply obtain the name of the child's primary caregiver and set the stage for the transition to the primary caregiver's interview.

Section F – Care of Focal Child

This section begins by obtaining basic information, in items F1 to F4, from the primary caregiver about how long the child has been in the care of this individual and how much care the child receives, i.e., how many hours per day and days per week. Items F5 through F9 obtain information about how much help from other adults the primary caregiver has when caring for the child. The information

obtained in this set of questions can also be used in conjunction with information provided in the Parent Interview about the number of different child care arrangements the child has had. The remainder of the items in this section establish basic information about the language environment the child experiences while under the care of this individual.

Section G – Other Children in Care

The size of the group of children that child care providers care for at any one time has been found to be an important predictor of the quality of care, especially in center-based care. Therefore items G1 through G5 obtain information about the size of the group who share the caregiving when the child is present and the group's age range which can indicate the amount of demand placed on the primary caregiver. It is also possible that the effects of group size may be mediated by the characteristics of other children in care. For example, a relatively large number of younger children, a wide age range, or the presence of special needs children or non-English speaking children, may place additional demands on the caregiver's ability to provide adequate nurturant care. These competing demands may reduce the availability of care to any one child. Therefore, items G6 through G10 obtain information about the characteristics of children in the child's group.

Section H – Child's Development

One of the most important developmental milestones that children typically achieve during the toddler period is communicative ability, both through gestures and through the acquisition of language. All the items in this section obtain information about children's communicative abilities. The questions are arranged such that if the child is able to speak in 2-word utterances, the questions about communication via gestures can be skipped. For children who are preverbal, Item H2 obtains information about the child's ability to communicate by using four gestures that are common at this age. These items were selected from the "Actions and Gestures" subscale of the MacArthur Communication Development Inventory because they are appropriate for 18-month olds and are behaviors that child care providers are likely to observe in the children they care for. Item H3 includes items that tap children's expressive language and language comprehension.

Section I – Child Temperament

Section I obtains information about children's temperament, generally defined as individual differences in a set of personality characteristics appearing early in life that have a probable constitutional biological basis. It is thought that these characteristics have both direct and indirect effects on children's later educational outcomes. The child's ability to pay attention, for example, may be directly associated with the child's ability to learn. An example of an indirect effect would be the caregiver's frustration with caring for a difficult child may have a negative impact on the caregiver's ability to provide nurturant care. The three items in the 18-Month Child care Provider Interview that measure temperament were taken from NLSY and NLSCY: (1) "How often do you have trouble soothing or calming child when he/she is crying or upset? (2) "How much does child smile, laugh or make happy sounds?" and, (3) "For most caregivers, how difficult would [Child] be to take care of?"

Section J – Caregiver-Child Relationship

The child-caregiver relationship is a critical aspect of child care quality. Research suggests that the quality of the child-caregiver relationship is an important predictor of children's outcomes, Therefore, Section J includes two sets of items that assess the quality of the child-caregiver relationship. The first set of six items was selected from the 15-item Short Form of the Student-Teacher Relationship Scale (STRS: Pianta, 1996), which has its conceptual roots in attachment theory and research. The STRS has been used as a measure of student-teacher relationship in several large-scale national studies, including the NICHD Study of Early Child Care, and the Cost, Quality, and outcomes in Child Care Study, and in many smaller-scale studies. Three items assess the closeness of the relationship between the caregiver and the child and three items assess conflict between the caregiver and child. Only those items that were age appropriate were included. The second set of items were selected from the Child-Caregiver Relationship Inventory (van Ijzendorn, 1998) and measure the caregiver's general perception of the quality of the child-rearing relationship between the caregiver and the child.

Section K – Parental Involvement

Questions K1-K4 comprise a brief set of four questions that obtain information about parents' involvement in the child's alternate care. One question asks about the extent of parental

involvement in the child's' care. Two questions ask about the frequency and direction of communications about the child's well-being while under the child care provider's care and one question obtains information about the caregivers' attitudes toward spontaneous visits from parents. Item K5 consists of a subset of questions from van Ijzendoorn's (1998) Parent-Caregiver Relationship Inventory (PCRI) and obtains information about the quality of the relationship between the parent and the caregiver. This instrument has been used in a survey of a national Dutch sample (N-568 children). Seven items were selected to assess the provider's impression of the relationship with the parent. This set of items is similar to that used in the Parent Interview to obtain the parent's impression of the relationship.

Section L – Caregiver Beliefs and Attitudes

Caregiver knowledge and beliefs about child development may be related to the development of the children in their care. Items L1 and L2 obtain information about the caregiver's knowledge of child development the early years, the achievement of basic developmental milestones and the ages at which children achieve certain milestones. These items were selected from the Knowledge of Infant Development Inventory (MacPhee, 1988) and have been used previously in large scale studies of child development. Item L3 assesses beliefs about typical child-rearing issues, such as the need for strict rules, the best age for beginning toilet-training, etc. The items included in this set assess the extent to which caregivers value obedience to authority and try to control the behavior of children in their care. Similar items are included in the 18-month Parent interview, so the consistency of attitudes between parents and caregivers can been examined. Item L4 consists of a subset of items from the Child Rearing Practices Report (CRPR) that have been modified to measure caregiver practices and attitudes toward child rearing. There are two subscales that include an authoritarian pattern of child care and an authoritative pattern.

Item L5 asks caregivers to indicate how important various factors are in providing quality child care. There is some research to suggest that there is variability in caregiver attitudes about what constitutes quality care. For example, some caregivers believe that the most important consideration is providing a safe environment whereas other emphasize the importance of establishing and warm and nurturant relationship with the child.

Caregiver perceptions of stressful caregiving events are likely to have an impact on the quality of care the caregiver is able to provide. Item L6 asks respondents to indicate how frequent typical

routine caregiving events are and then to indicate whether they are perceived as stressful or not. In items L7 and L8, caregivers are asked about their neighborhood as a place to provide care to children. Neighborhood quality is of particular importance for informal care providers who often care for children in their homes because neighborhoods differ greatly in their of safety. The neighborhood where the child is cared for is a variable that may have an impact on development.

Section M – Learning Environment

Items M1 to M9 obtain information about the learning materials and educational activities that are available to the child while in the provider's care, such as the number of books available to child and how often the caregiver reads to the child(ren). Item M10 asks the caregiver about health and safety practices that enable the child to explore the environment safely. These "child-proofing" practices include such precautions as using electrical outlet covers, keeping hazardous materials in locked cabinets, having working smoke detectors. These practices are particularly important at this age because it is at this time that the toddler is becoming mobile and exploring the environment. In addition, similar questions about health and safety practices are asked during the parent interview, which will enable comparisons across caregiving settings.

Items M11 and M12 obtain information about the meals and snacks, if any, provided to the child by the child care provider. These two items were contributed by the USDA and are asked only of center directors and family child care providers.

Section N – Caregiver Background

Items N1-N11 obtain basic sociodemographic information about the caregiver in order to describe the basic resources that caregivers may have available to them when caring for the child. Among the important background variable are gender, age, race, ethnicity and country of origin, marital status and whether the caregiver has any children. Items N12 and N13 ask about the number of books the caregiver has read in the past year. Items N14-N28 obtain information about the caregiver's qualifications in terms of general education level, training specific to early childhood, and previous experience.

There has been recent interest in studying why people provide child care in other studies of child care providers (e.g., the NICHD Early Child Care Research Network). Asking the items in question N29 about motivation for providing child care will allow further investigation of how this topic is related to child care quality and child outcome.

Section O – Caregiver Health

The first two questions (O1 and O2) ask the care provider to rate her current health status (as excellent, good, etc.) and whether a health problem limits her ability to work. The next three questions (**O3-O5**) ask about the caregiver's current smoking habits and whether anyone else smokes around the child while the child is in care.

Section P – Income

Several major studies, such as the National Child Care Study (NCCS) and the National Child Care Staffing Study (NCCSS) have found that higher salaries were associated with higher quality child care environments. Therefore, caregivers are asked about the amount of income they earn for providing child care in Section O. In addition to salary earned for providing child care, household income is obtained from caregivers. Depending on the location of care provision, the caregiver's income may have more or less of an effect on child's care. For example, caregivers from low-income households may exhibit more inconsistent or harsh behavior with their children, or they may be less emotionally available for their children.

Appendix A

Appendix A

JUSTIFICATION FOR THE ECLS-B 9-MONTH PARENT INTERVIEW

The 9-month Early Childhood Longitudinal Study-Birth Cohort (ECLS-B) interview will be conducted by a trained interviewer, during a home visit with the best respondent, usually the child's mother. The interview contains child-oriented questions, for example on the infant's routines, feeding habits, temperament, health, and developmental milestones. In addition, items about the level of education, income and employment status, health, quality of relationships, and literacy are asked about the infant's parents. Finally, general baseline data is gathered in the areas of household composition, child care, and marital information. The interview is expected to last approximately 50 minutes and will generally be conducted prior to the administration of the Bayley Child Instrument.

Section B—Feeding and Developmental Milestones

Section B begins by asking about breast-feeding and regular eating patterns (B1-B7). Both formula and breast milk are sources of early adequate nutrition levels among infants and toddlers. Breast milk contains antibodies to protect against illness (such as respiratory and gastrointestinal illnesses and ear infections), is associated with especially positive health outcomes among low birth weight infants, and among mothers, lowers the chance of breast cancer later in life while promoting a faster recovery from childbirth (Eiger & Olds, 1987). The American Academy of Pediatrics recommends that infants receive breast milk for the first 6 to 12 months of life (Glick, 1997). Despite the positive health outcomes among mothers and children, there is a lower incidence of breast-feeding among younger, poorer, less educated, and minority women (Eiger & Olds, 1987).

A set of 11 questions, provided by U.S. Department of Agriculture (USDA), obtains information about the nature of the child's early nutrition. Several of these items obtain data about early breastfeeding versus formula feeding. (Other items ask about when the child began receiving different types of solid foods, as well as drinking from a self-held cup.) Choosing whether to breastfeed or formula feed has numerous health and nutritional implications for the infant. Promotion of breastfeeding is one of the objectives specified by the U.S. Department of Health and Human Services (HHS) in its Healthy People 2000 report (HHS, 1990). Almost all of the benefits of breastfeeding depend on the duration of breastfeeding. Recent evidence indicates that even some of the immunological benefits of breastfeeding cannot be observed if the duration

of breastfeeding has been shorter than approximately 3 months (Bedinghaus and Doughten, 1994; Howie et al, 1990). It is, therefore, extremely important to determine duration of breastfeeding, as well as initiation of breastfeeding.

Food and nutritional intake (B8-B12) is also an important aspect of early child health. Inadequate nutrition among infants and young children is related to failure to thrive and may be associated with physical problems, deficits in intellectual and socioemotional development, and may have lasting effects on children's physical and mental health (Dwyer & Argent, 1990). Poor nutrition in the first months and years of life, when the brain is rapidly developing, may lead to intellectual impairment (Balazs, Jordan, Lewis, & Patel, 1986; Sewell, Price, & Karp, 1993). Infants and toddlers who are undernourished have also been found to have substantially reduced levels of visual and physical exploration of their environment, which is associated with early cognitive development (Barrett, Radke-Yarrow, & Klein, 1982; Cravioto & Arrieta, 1986). In addition, parents who are malnourished have been found to provide lower levels of cognitive, social, and emotional stimulation to their infants (Wachs et al., 1992). Children of disadvantaged parents, children of teenage mothers, and children whose parents are currently receiving welfare may be at a higher risk of nutritional problems (Hofferth, 1987).

The introduction of supplemental foods is not only significant for their nutritional content but also for establishing health eating habits and providing a transition to a modified adult diet. In order to establish sound eating habits and avoid further inadvertent forced feeding, it is important that supplemental foods are not introduced before an infant can turn away from food and express satiety. On the other hand, it is recommended that supplemental foods be introduced by about 6 months of age (American Academy of Pediatrics, 1993). Delayed introduction may lead to difficulties of accepting food at a later age (FNS, 1993a).

There appears to be a consensus regarding the earliest time of initiation of foods other than breast milk or formula. It is recommended that the decision regarding the initiation of supplemental foods be based on physical, psychological, and physiological maturity of the infant (FNS, 1993a.) An infant who can sit and independently support his or her head and neck, can draw in the lower lip as a spoon is removed from the mouth, can keep food in the mouth and swallow rather than pushing it back out, and is able to express satiety, is assumed to be ready to receive supplemental foods alongside nursing (American Academy of Pediatrics, 1993; Bedinghaus and Doughten, 1994; FNS, 1993a; Fomon, 1993).

The mother or caregiver must make many choices during the transitional phase of infant feeding regarding which foods to introduces, when to introduce them, and in what order. This study will allow analysts to document whether inappropriately early introduction of supplemental foods occurs among Women, Infants, and Children (WIC) mothers, and if so, the extent tot what those feeding practices are prevalent.

During the transitional phase, the method of feeding supplemental foods is significant because of its implications regarding the infant's health and the development of good eating habits. In general, it is recommended that no supplemental foods be fed by a bottle or an infant feeder (FNS, 1993a). Furthermore, there exists a consensus among medical professionals that fruit juices must not be given to infants in a bottle, due to the risk of dental cavities (American Academy of Pediatrics, 1993); Fomon, 1993). The data collected will allow the analysts to compare the feeding practices adopted by WIC mothers to the recommendations of FNS.

In the middle range of variation in children's early development, few studies have found significant associations between the age at which infants achieve early developmental milestones (B13-B22) and their later intellectual functioning. However, extremely late or extremely early attainment of key milestones are associated with developmental abnormalities or intellectual giftedness. Moreover, the extent to which infants reach particular sensorimotor and cognitive milestones (e.g., sitting, crawling, walking) may be associated in part with the kinds of physical and verbal stimulation they have received from the environment and may also subsequently affect the kinds of physical and social feedback that the child receives. Parents of children who do not follow the "normal" pattern of expectations for development (e.g., due to prematurity, Down syndrome, etc.) have been found to be more intrusive with their infants. Although this is probably due to the low responsiveness of the infant, it may lead to the unfortunate consequence of increasingly negative interactions in the future. Therefore, it is important to know how well the child's developmental progress meshes with or is discordant with parental expectations. In addition, this information would be helpful for growth curve modeling by providing converging evidence for the starting points of the child's developmental trajectory: whether the child's early developmental progress was on target or whether delays were apparent at an early age or emerged later. Information obtained about children's early developmental progress would also provide convergent evidence for standardized assessment scores.

For these reasons, a set of six questions were adapted from the "Child Development Chart, First 21 Months" of the MN-CDI (Ireton, 1992). The mother is first asked whether the

child can do a particular item, and, if yes, how old the child was at the time a particular developmental skill was first demonstrated. For the 9-month interview, items were identified as being appropriate for inclusion according to the following criteria: (1) they are important indicators of developmental progress in their own right; (2) they are among the most salient skills that are easily observable by mothers; (3) their salience makes them easily remembered and easily reported by mothers; (4) they do not overlap with any of the items that are included in the BSID. The 9-month items include how old the child was when he/she first sat him/herself up; how old the child was when he/she first started eating solid food; and how old the child was when he/she started feeding him/herself. The latter item, feeding self, is one that most 9-month-olds will not have achieved yet, however it is included in the 18-month interview and forms the bridge between the 9-month and 18-month milestones. Finally, items were adapted from the MN-CDI rather than from the Vineland Adaptive Behavior Scales because the wording of items on the MN-CDI is more straightforward and easily understood by parents of all educational levels. The items selected, however, do appear in both the Vineland Adaptive Behavior Scales and in the MN-CDI, which further suggests that these items are of central importance in assessing milestones.

Section C—Child Temperament

Temperament is generally defined as individual differences in a set of personality characteristics appearing early in life that have a probable constitutional biological basis. Individual differences in temperamental dimensions such as attention, activity level, sociability, and emotionality are conceptually associated with later child educational outcomes both directly and indirectly through the effect that these characteristics have on both adults and other children with whom the child interacts. In addition, temperament characteristics appear to be moderately enduring in early childhood. Longitudinal studies of temperament in infancy and early childhood have found moderate stability for some temperament dimensions across the infant-toddler period and early childhood (Broberg, Lamb & Hwang, 1990).

The proposed plan in ECLS-B is to measure temperament (C1-C8) only at the 9-month visit. It is generally agreed that, from 12 months and following, temperament becomes combined with the effects of parent-child interactions and the social environment to form early attachment relationship patterns and other social-emotional constructs.

By one year, temperament also has an influence on the child's emergent learning styles. Children who are highly active and seek novel stimuli tend to explore the environment more and show early signs of curiosity to learn about the environment. Children who are more inhibited or who are slow to warm up may not engage in high levels of curiosity and exploration but rather show a more incremental, careful approach to learning about the environment and may be somewhat slower to develop new skills. Although these more inhibited children learn the necessary skills for school readiness, they show a different method or style for learning that continues in later ages. They may initially react negatively to new stimuli and will display a slower, more determined or methodical approach. Further, these children may not rely so strongly on social or interpersonal cues in learning because of their inherent shyness aground others. These are among the more important reasons for including temperament in ECLS-B. Temperament emerges early in life and underlies some of the later differences in children's learning styles.

The items selected to measure temperament were taken from the National Longitudinal Study of Youth (NLSY) and the Canadian National Study of Children and Youth (NLSCY). Most of the items in the NLSY were included, although a few items were combined (e.g., "Turns away and cries at stranger" and "Turns away and cries as unfamiliar animal" became "Turns away and cries at stranger or unfamiliar animal") to reduce administration time. Four items were dropped because they were redundant. Inclusion of these NLSY and NLSCY items will allow comparisons between the ECLS-B and the U.S. NLSY and Canadian NLSCY surveys.

The temperament items in the NLSY and the NLSCY were originally those developed by Rothbart for the Infant Behavior Questionnaire (IBQ) and by Campos and were suggested by our consultants as the key indicators of early child temperament. All items refer to specific behaviors in specific situations. Parents are asked to judge the frequency of specific behaviors during the past 2 weeks. As in the NLSY and the NLSCY, the response categories for the temperament items in the ECLS-B range from "Almost never" to "Almost always." Items have been selected from the Activity Level, Distress to Novel Stimuli, and Negativity/Difficulty constructs based on advice from our consultants. Two items measure distress or fearfulness to novel stimuli including: (1) "When child sees a stranger or unfamiliar animal, how often does he/she turn away or cry as if afraid?" and (2) "When child hears an unexpected loud sound, how often does he/she cry or become upset?" Because the negativity/difficulty construct is the most predictive, several items from that subscale were selected for inclusion: (1) "How often do you have trouble soothing or calming child when he/she is crying or upset?" (2) "How often does child get hungry at about the same time each day?" and, (3) "Please rate the overall degree of

difficulty your child would present for the average parent." Finally, one item, "How often does child wave his/her arms and/or legs during feeding," measures the child's activity level.

These constructs and items were also selected because they complement but are not redundant with the Behavior Rating Scale (BRS) of the Bayley which obtains observational measures of different aspects of children's temperament, including emotional regulation, orientation and engagement with the testing situation and materials and the quality of the child's gross and fine motor abilities. Specifically, the emotional regulation factor of the BRS measures children's attention to and persistence at and frustration with tasks, orientation to and cooperation with the tester, and adaptability to transition in test materials, as well as negative affect. The orientation/engagement factor measures predominant arousal state, energy level, initiative, enthusiasm and exploration of objects, and social engagement with the examiner. The motor quality factor assesses the child's pacing of movements and the presence of hypotonicity or hypertonicity. The NLSY items describe the child's temperament in the home on a daily basis whereas the BRS assesses the child's behavior and responses to a novel and challenging testing situation.

Section D—Pregnancy, Breast-Feeding, and Early Child Feeding

The first set of questions in Section D of the interview gathers information on unplanned pregnancy (D1-D7, D11). Unplanned pregnancies are related to taking risks during pregnancy (e.g., smoking or drinking alcohol), low birth weight, poor child health, and infant mortality. There is also evidence that mothers with unwanted births spend less time with their children and tend to spank or slap them (Barber, Axinn, & Thornton, 1997). Having an unwanted pregnancy can also negatively affect a marriage or partner relationship and a mother's mental health (Baydar & Grady, 1993; Brown & Eisenberg, 1995; Carnegie Corporation of New York, 1994). The wantedness of the pregnancy is assessed in a small set of questions that ask about prepregnancy birth control use, how much the mother and the father wanted a child at the time the pregnancy occurred, and how soon after finding out about the pregnancy did the mother tell the child's father.

Although weight gain during pregnancy is collected from the birth certificate, prepregnancy weight (D12, D19-D20) is also needed to calculate Body Mass Index (BMI) and will also help get at postpartum weight loss. Current research shows maternal prepregnancy weight status and pregnancy weight gain as major determinants for newborn weight and size,

even in highly developed countries. Although pregnancy weight again was significantly higher in underweight women than in normal weight, higher pregnancy weight gain was not able to compensate for the negative impact of poor weight status before pregnancy (Kirchengast and Hartmann, 1998).

Section D also obtains information on factors related to having a healthy pregnancy and delivery, such as receipt and content of prenatal care (D8-D18). (Because this information focuses primarily on pregnancy experiences, it will be collected at the 9-month baseline interview only. Data about pregnancy collected in a later interview would be subject to recall problems, and would be substantially more unreliable.) Receipt of prenatal care is an important factor in assuring that mothers have healthy pregnancies. In addition to ensuring medical monitoring to enable the early diagnosis and treatment of conditions that could affect the health of the child, it also provides mothers with information on proper nutrition and vitamin supplements and the need to eliminate health risk behaviors.

A number of studies have indicated a relationship between the use of prenatal care services and birth outcomes (Gortmaker, 1979; Alexander and Korenbrot, 1995). Adequate utilization of prenatal care has been associated with improved birth weights, and the amelioration of the risk of preterm delivery (Sokol, Woolf, Rosen, et al, 1980; Poland, Ager, Sokol, 1991). Inadequate prenatal care utilization has been associated with increased risks of delivering a low birth weight infant, premature birth, neonatal mortality, infant mortality, and maternal mortality (Fisher, LoGerfo, Daling, 1985; Lieberman, Ryan, Monson, et al, 1987; Koonin, Atrash, Lawson, Smith, 1991).

However, many of the studies examining the relationship between prenatal care utilization and birth outcomes were based on summary utilization measures, such as the Kessner Index. The index is an algorithm derived from the total number of prenatal care visits and when the trimester prenatal care began, adjusted for gestational age at delivery, and can be derived from information on the birth certificate (Kessner, 1973). Few studies have had the opportunity to examine content of prenatal care.

In 1989, a report of the U.S. Public Health Service Expert Panel on the Content of Prenatal Care, entitled *Caring for Our Future: The Content of Prenatal Care*, attempted to go beyond the published literature and delineate that components should be included in providing the most effective prenatal care. The report noted that many prenatal care practices have not been

studied and that many practices that were studied were not evaluated rigorously or with adequate research design.

The few studies that do exist on the content of prenatal care indicate that women who receive the advice recommended by the expert panel were less likely to deliver a low birth weight infant (Kogan, Alexander, Kotelchuck, et al, 1994). However a number of women did not report receiving the recommended care, and racial differences were reported in the care received (Kogan, Alexander, Kotelchuck, et al, 1994. Therefore, questions are included in ECLS-B that ask about prenatal care, when it was first received and how many prenatal care visits the mother had, per trimester, with a health provider prior to delivery. Prenatal care information is also obtained from the birth certificate.

The use of ultrasound (D18) can provide added confidence about the accuracy of gestation information. Most ultrasounds in the first half of pregnancy are for routine reasons, with usually no abnormalities found. At least two research programs have shown an excess of non-right-handedness among children exposed in utero to just one or two ultrasound scans. (Handedness has also bee associated with maternal age and difficult pregnancies, information that the ECLS-B also plans to collect.) The excess of left-handed children was small and nonsignificant; the excess of apparently ambidextrous children was larger. Since ECLS-B has the potential of administering an objective test of handedness in future waves, information collected at baseline about prenatal sonography is all the more valuable. Such information would make it possible to test the hypothesis put forth by subtly prenatal insult that forces a switch in cerebral dominance. Handedness may serve as one proxy for brain functioning and its use.

Information about maternal health practices (D21-D27) are obtained in a set of questions that ask about vitamin and mineral supplements and about maternal risk behaviors before and during pregnancy (alcohol intake and cigarette use). In some cases, women begin using a substance after getting pregnant, or after the birth of her child. The questions on substance use provide information on the timing of smoking during pregnancy and dose of cigarettes smoked (Kharrazi, et al, forthcoming,). Children's exposure to maternal smoking has been shown to have many health consequences, including low birth weight, infant mortality, respiratory infections, asthma, and modest impairments of cognitive development (Weltsman, M et al, 1992). Cigarette smoking during pregnancy can also be harmful to the mother, leading to placenta previa, abruptio placentae, and bleeding during pregnancy. Alcohol use during pregnancy has been cited as the most common known nongenetic cause of mental retardation among children and youth (IOM, 1996).

Information about smoking is also available on the birth certificate. However, these items have been found to be among the least reliable and valid items on the birth certificate, underestimating smoking during pregnancy by 15 to 28 percent (Piper et al., 1993; Buescher et al., 1993). Underestimation occurs because previously recorded information on smoking listed in medical records is not always noted on the birth certificates. In addition, underreporting is common in the medical records themselves because some pregnant women do not report smoking to their doctor or care providers (Dietz, Adams, Kendrick, Mathis, et al., 1998). Two studies found that 28 to 35 percent of pregnant women who reported to their prenatal care providers that they did not smoke had nicotine levels indicating active smoking (Windsor, Lowe, Perkins, et al., 1993). Interview data, while still subject to underreporting bias, should be more useful. In a study comparing accuracy of smoking data on birth certificates to questionnaire data (specifically, the PRAMS question asking about smoking in the last 3 months of pregnancy), the authors found that the "prevalence of prenatal smoking was lower using birth certificate data than using PRAMS questionnaire data" (Dietz, Adams, Kendrick, Mathis, et al., 1998). In the six states where the study was conducted, completeness of ascertainment of smoking during pregnancy (defined as the percent of smokers reported on the birth certificate divided by the total number of smokers—reported on *both* the certificate and the PRAMS questionnaire—in the sample) was lower on the birth certificate than on the questionnaire (completed 2 to 6 months after birth). On the birth certificate, completeness of ascertainment of prenatal smoking decreased as a woman's education increased. On the PRAMS question, completeness decreased only among women aged less than 20 years; there was not variation in completeness by education or marital status (Dietz, Adams, Kendrick, Mathis, et al., 1998). Obviously, while still subject to underestimation, the PRAMS smoking items are more reliable than the birth certificate smoking data.

Medical complications during pregnancy (D28) and delivery can have lasting effects on children's growth and development as well. Complications or early delivery may result in a low birth weight infant, who will have a much greater risk of developmental and behavioral problems, lower educational achievement, and poorer health (Frisbie, Forbes, & Pullum, 1996; McCormick, 1989; National Commission on Children, 1991; McCormick, Gortmaker, and Sobol, 1990). For these reasons, the mother is asked about whether she had any complications during pregnancy and, if so, what was the nature of the problem. Although the mother is not asked directly about prematurity or the method of delivery, that information will be obtained from the child's birth certificate.

In addition, several questions address issues related to pregnancy planning (D29-D30), including maternal past pregnancies and the number of and timing of children the mother plans to have.

In addition, a set of questions obtains information about the health of the child as a newborn (D33-D38). Neonatal physical well-being is an important predictor of later child development outcomes: without it the infant's physical growth, cognitive, emotional and social development are in jeopardy. Poor health status at birth and in infancy exerts its effects in both direct and indirect pathways. The direct effect is through the physical consequences that may endure beyond the neonatal period (National Commission on Children, 1991a). The indirect effect of compromised infant health status is through the social consequences that are secondary to the original physical problem (Alexander & Entwisle, 1988). Several questions assess the child's health status perinatally. These questions obtain information about whether the child had any medical problems at birth that required care in the hospital or the NICU, and for how long did the child receive this care.

A few questions at the end of the section ask about any occasions when the respondent and the child were separated (D39-D41). (We are only asking about periods of 1 week or more.) It has been shown that periods of separation, in the first 8 months on the infant's life, can lead to problems with the infant's development of a secure attachment to the primary caregiver.

Section E—Mother's Background

Several background variables are important to include in the parent interview in order to describe the basic resources and risks mothers have that may affect their children's development. Questions on mothers' backgrounds will be first asked in the 9-month interview; characteristics that may change over time (e.g., employment, education) will be asked about again in the followup interview.

The stability of the mother's family may be an important predictor of the psychological well-being of the mother and her attitudes about child rearing that affect the resources and stability that the mother is in turn able to provide for her child. For this reason several items ask about the continuity of care that the mother received as she was growing up. For example, whether she lived with both her biological mother and biological father as a child

(E1-E6), and whether her family was financially sufficient or received AFDC (E7-E8). The latter is also relevant to research questions about intergenerational transmission of dependency.

Mother's educational attainment (E11-E18) is a major predictor of child outcomes, with better-educated mothers having children with more positive outcomes (White, 1982; Zill, 1996). Parent education has also been shown to predict children's success in the early primary grades (Alexander & Entwisle, 1988). Mothers' high school experiences, such as grades received in school, type of program (e.g., academic or vocational), types of math classes taken, and parents' education level (E9-E10), can be combined to estimate their cognitive abilities (Orvis & Gahart, 1989). If mothers report needing special help in school, this may be indicative of a learning disability that could have a genetic or familial component. Therefore, information is obtained about whether she ever had to repeat a grade, had special help with reading, and, if a high school graduate, what type of high school program (college prep, commercial, or vocational) she attended.

Section F—Household Composition

Of primary interest under the household composition construct is the number and types of parents present in the household (F1-F13). Research indicates that a wide range of outcomes for children are better if two biological parents who interact with minimal conflict are present (Dawson, 1991; McLanahan & Sandefur, 1994; Morrison & Cherlin, 1992; Peterson & Zill, 1986). Children living with single mothers are also important to identify. Single mothers are more likely to be poor (Garfinkel & McLanahan, 1986; Bane & Ellwood, 1983), and their children are likely to have lower educational attainment (Aquilino, 1996). Also, knowing the total number of household members in children's households will indicate possible overcrowding, which could negatively affect children's well being or health. Measuring the number of children in the household will give some information on the extent to which parents must divide their caregiving and attention among children. For these reasons, Section F obtains a complete roster of all household members, their ages, gender, ethnicity, and relationship to the child.

Race and ethnicity is also obtained for each member of the household matrix. Questions F12 and F13 are from the Census Bureau. The racial classification used by the Census Bureau adhere to the October 1997 revised standards for the classification of Federal data on race and ethnicity, issued by the Office of Management and Budget (OMB). Each answer provided by a respondent represents self-classification according to the race or races with which the

respondent most closely identifies. This question includes both racial and national origin or sociocultural groups and attempts to reflect the increasing racial and ethnic diversity of the U.S. population. The term "African American" is included to reflect the increased prevalence of the term in the past decade (Census Bureau, 1998).

Section G—Marriages and Partner Relationships

The mother's marital history (G1-G13), and history of other cohabiting relationships, will be measured in Section G to give some indication of the stability of parenting figures in children's lives and support for mothers in parenting. It is known that children of parents who experience a marital separation or divorce typically show more problems in their learning and development than other children whose parents live together. Separation and divorce have been linked to children's emotional distress (Chase-Lansdale & Hetherington 1990; Furstenberg 1990), declines in school achievement, and increases in problem behaviors at school (McLanahan & Sandefur 1994).

The last few items in this section obtain information about the quality of the mother's relationship to the child's father (G14-G17). Low marital satisfaction and high conflict are predictive of future marital disruption. High marital quality has been found to be associated with positive outcomes for children, such as parents having more favorable attitudes about being parents, parents using more complex sentence structures in speaking to their children, and greater child attachment and security (Cummings and O'Reilly, 1997; Pratt, Kerig, Cowan, & Cowan, 1992; Goldberg & Easterbrooks, 1984; Howes & Markman, 1984). However, among the various dimensions of marital quality, the dimension of marital conflict in particular has been found to be associated with child outcomes, such as emotional disturbances, problems with interpersonal interaction, and diminished academic performance, including poor grades and teacher reports of problems in achievement and abilities. There is also evidence that the greater the frequency of conflict, the more difficulties exhibited by children (Cummings & Davies, 1994).

Marital conflict may have an impact on young children in two ways. First, marital conflict has been shown to have negative effects on parenting behavior, thus negatively affecting the parent-child relationship and child outcomes (Belsky, 1984). Second, there appear to be direct effects of conflict on children. Conflict between parents at home and between parents who do not reside together have been found to negatively influence children's psychological adjustment (Grych & Fincham, 1990; Shaw & Emery, 1987). It has also been shown that 1- to 2-

year-olds attempt to intervene between angry parents with comforting or distracting behavior, which is considered inappropriate and burdensome for young children and may interfere with other important developmental tasks, such as exploration. There is evidence that children of married parents in high conflict relationships have adjustment problems that are similar to those experienced by children of single parents (Hanson, 1993; Peterson & Zill, 1986).

Four questions are included that obtain information about the characteristics of the mothers marriage (or current relationship). One question asks her to describe the level of happiness of her marriage or relationship. Another question asks about how often the mother and her spouse or partner engage in such positive activities as laughing together, or talking about things that interest them both.

Not all forms of conflict are equally harmful to children (Cummings & Davies, 1994). One important factor appears to be the parents' ability to reach resolution. In one study of 2-year-olds, aggression and distress following conflict diminished substantially following complete conflict resolution (Cummings, Iannotti, & Zahn-Waxler, 1985). Another factor is whether the conflict involves physical aggression. Exposure to violent conflict, in particular, is associated with serious behavioral and emotional disorders in children (Cummings & Davies, 1994; Debowitz & King, 1995, Grych & Fincham, 1993). In addition, children in homes where domestic violence is happening between adults are much more likely to be battered themselves. Among battered women, 85 percent report that their children are abused as well (Straus, Gelles, & Steinmetz, 1980). Therefore, the last set of questions obtains information about how the couple deals with serious disagreements and how often they argue heatedly, for example, or discuss disagreements calmly or reach a compromise.

Section H—Expectations for Child Development

The extent to which parents are aware of the general process of child development may be related to their own child's development. Parental knowledge of developmental milestones (H1-H2) is associated with positive parenting practices and child outcomes, especially among families at risk (e.g., Field, Widmayer, Greenberg, & Stoller, 1982; Greenberg & Crnic, 1988; Stern, 1990). Also, abusive parents have been found to have unreasonably high expectations for their children's behavior; it is thought that this may lead to frustrations when children do not live up to these expectations, which in turn promotes abusive behavior. Items asking about parents' expectations for child development have been proposed for both the 9- and

18-month interviews. The 9-month measurement point was deemed critical because of the need for baseline measurement of this construct; and at this early age, mothers are first becoming acquainted with the needs and abilities of their infants. The 18-month interview was chosen because of significant gains in development made by children between the 9- and 18-month age span (e.g., walking and language development).

At 9-months, one set of questions asks the respondent whether s/he agrees with statements such as "All infants need the same amount of sleep" and "Children learn all of their language by copying what they have heard adults say." A second set of questions is included that obtains information about the mother's expectations about when she thinks babies (in general) become able to do certain things, of which "know right from wrong," "be ready for toilet training," or "cooperate and share when playing" are a few examples.

Section I—Home Educational Activities and Language Environment

Measurement of home activities that stimulate development is considered critical and has been proposed for both measurement time points. Numerous studies have indicated that high levels of positive, age-appropriate cognitive stimulation for infants is related to better social and mental development in children (Bakeman & Brown, 1980), including measures of cognitive development and IQ in preschool and later (Bradley & Caldwell, 1976a, 1976b, 1980, 1984a; Bradley, Caldwell, & Elardo, 1979; Bradley et al., 1989; Lozoff, Park, Radan, & Wolf, 1995), and school achievement (van Doorminick, Caldwell, Wright, & Frankenberg, 1981). Research has also suggested that cognitive stimulation in very early life may have implications for brain development and cognitive potential (National Commission on Children, 1991).

The amount of verbal interaction that infants have with their parents has been shown to influence children's language development, including language production and reading ability, as well as other academic skills, such as mathematics, in the school years (e.g., Bradley & Caldwell, 1980, 1984b; Bradley et al., 1989). Verbal interactions include singing, playing games, talking, and reading. Clarke-Stewart (1980) found that mother-infant verbal interaction and verbally mediated toy play were associated with cognitive development. One aspect of verbal interaction to study is the extent to which a non-English language is used in the household. There is some evidence that frequent use of a non-English language is related to lower test achievement among Hispanic students (Fernandes & Nielsen, 1986). To obtain information about the

language environment of the child (I1-I6), several questions are asked about language(s) used in the home and by whom and what language(s) is (are) spoken to the child.

Information about the literacy environment in the home (I7-I8) and maternal literacy-related activities is obtained in several questions about how many books there are in the home and how often the mother reads books, magazines and newspapers. As well, information is obtained about the frequency of book reading to the child (I9). There is also evidence that parents who read more tend to have children who read at earlier ages (Teale, 1984). This may be because children who observe their parents reading to themselves may become more motivated to learn to read and to actually read themselves than are children whose parents do not read.

Engaging young children in shared activities (I10) is another form of cognitive stimulation for children. Clarke-Stewart (1980) found that fathers who were able to keep their infants interested in games such as peek-a-boo, ball toss, and bouncing had more cognitively advanced children. Another activity is taking outings, such as to parks and playgrounds, to provide children with opportunities for exploration, exercise, and social interaction. Early literacy development has also been shown to be related to family social interactions not necessarily intended to foster language development (e.g., shopping), especially among low-income samples (Teale, 1984). In addition to direct book reading to the child, information is obtained about the frequencies of various types of stimulating or educational activities with the child, such as singing songs or nursery rhymes, going to the park, and taking the child shopping or on errands.

Section J—Parenting Behavior and Attitudes

An important dimension of parenting behavior is warmth, physical affection, and emotional supportiveness. A robust finding in child development research is that parental warmth exhibited in the first few years of life is one of the strongest predictors of positive developmental outcomes. Furthermore, supportive parenting is associated with positive outcomes for children, even in the presence of extreme socioeconomic disadvantage (Marsiglio, 1995; Sampson & Laub, 1994).

Affectionate behavior by parents is associated with several positive outcomes for infants and toddlers, including a secure infant-mother attachment relationship (Ainsworth, Blehar, Waters, & Wall, 1978). Warm, affectionate behavior towards a child may also make the parent a

more powerful model for young children. Studies of pro-social development have indicated that children are more likely to try to imitate the behavior of a model who has exhibited warm, nurturing behavior than models showing more matter-of-fact behavior (Eisenberg & Mussen, 1989; Radke-Yarrow, Zahn-Waxler, & Chapman, 1983). Negative parenting practices are associated with poor outcomes for children in both the cognitive and social domains. Such negative practices include harsh discipline, high levels of control, ridicule, teasing, and extreme nonresponsiveness. Although not well studied among young children, such negative parenting practices may interfere with the establishment and maintenance of secure infant-parent attachment relationships (Bowlby, 1988) and with the development of perceived competence and mastery motivation (Harter, 1978).

Sensitivity and responsiveness to infants' signals is also associated with positive outcomes for children. Caregiver responsiveness is an important contributor to the establishment of secure infant-parent attachment relationships (e.g., Ainsworth et al., 1978; Belsky & Isabella, 1988; Egeland & Farber, 1984; Smith & Pederson, 1988), the development of emotion regulation (Tronick, 1989), mastery motivation (Harter, 1983), and literacy development (Baydar, Brooks-Gunn, & Furstenberg, 1993; van Aken & Riksen-Walraven, 1992).

One important aspect of parenting styles is the extent to which parents value obedience to authority and try to control their children's behavior. Research suggests that high levels of control or authoritarian parenting (J1) is negatively associated with school-related abilities in childhood (Hess & McDevitt, 1984) and adolescence (Connell & Wellborn, 1991; Dornbusch, et al., 1987). Harter (1978) found that parents who respond positively to their young children's attempts to independently master their environments, including exploration and attempts to master challenging tasks, facilitate the development of high levels of perceived competence and mastery motivation. In contrast, parents who discourage or punish independent behavior may lead their children to perceive themselves to be incompetent and unwilling to take on and master new challenges.

There may also be cultural differences in parenting styles and the value placed on controlling behavior and its effect on children. For instance, in a study of American-born and immigrant parents (Okagaki & Sternberg, 1993), immigrant parents rated conformity over autonomy as an important value in child rearing; in contrast American-born parents favored autonomy over conformity. In another study, Baumrind (1972) found that authoritarian parenting styles were more common among middle-class African American families than middle-class

white families, and that, unlike in the white families, authoritarian parenting in African American families was associated with independence and assertiveness in young daughters.

In consideration of the above discussion, a set of questions is included in Section J that assesses authoritarian parenting attitudes. The respondent indicates agreement with one of two opposing attitudes or beliefs, such as "You can (vs. you cannot) spoil a tiny baby by picking him up every time he cries," or, "Small babies should be fed on a regular schedule," versus "Small babies should be fed when they are hungry."

Sections K-N—Child Care Arrangements

A high and rising proportion of children spend time in nonmaternal care, and increasing numbers of them enter this care at a very young age. The NICHD Early Child Care Research Network (1996) found that 64 percent of their sample were in some form of nonmaternal care at age 6 months. In the United States as a whole, 19 percent of children less than age 1 with employed mothers were in center-based care in 1993, with the remainder in informal types of care such as care by a relative or family day care provider (U.S. Bureau of the Census, 1993). We propose to measure children's participation in child care arrangements (K1-M18) starting at the 9-month interview, and to update this information in more depth with the Childcare Provider Interview at the 18-month followup. It is considered important to capture changes in children's nonparental care arrangements over time, since consistency of care is a critical factor impacting child outcomes (discussed below). The earliest years of children's lives may be relatively turbulent as far as changes in arrangements, so it will be optimal to ask parents about child care at both measurement points, to improve the accuracy of their reports. It is also important to coordinate data collection about arrangements from parents with collection of information from child care providers, which is planned when the children are 18 months old.

There is no consensus in the research to suggest that child care at a very young age is beneficial or harmful. The NICHD Early Child Care Research Network (1997) found that while child care in the first year did not have a negative effect, children in high quality care settings scored higher on tests of cognitive and linguistic development. Thus, the effect of child care at very young ages may depend on its quality.

In fact, the quality and consistency of child care over time are crucial factors in the impact of child care on children. The quality and stability of care have been found to be related

to children's cognitive and socioemotional development (Hayes, Palmer, & Zaslow, 1990; Whitebook, Howes, & Phillips, 1989; Zaslow, 1991). In addition, Howes (1988) found that with family characteristics controlled, higher quality early child care (center-based or family day care) was predictive of better academic progress, better school skills, and fewer behavior problems in boys, and of better school skills and fewer behavior problems in girls at the end of first grade. Similarly, preschool students in model child care centers have exhibited more complex play patterns than their peers at marginally adequate child care centers (Howes & Matheson, 1992).

The type and site of care are closely associated with other variables affecting quality, such as the availability of contact with peers, planned educational activities, and whether care takes place in a child-centered environment. Children cared for in their own homes generally have less contact with other children; also the setting tends to be oriented for adults. At the same time, home care usually has a lower adult-child ratio. Family-based day care may provide more opportunities for contact with other children, but is usually not provided in a child-centered environment. Center-based care provides more opportunities for group activities, adult-child interaction and socialization; caregivers are also more likely to be trained, and the environment is more likely to be child-centered. These factors most often found in center-based care have been shown to affect children's scores in tests of social and cognitive competence (Clarke-Stewart, 1989; Harms, 1992; Kisker, Hofferth, Phillips, & Farquhar, 1991).

The cost of child care is also closely associated with its quality, as measured by such factors as training and education of providers and the child/provider ratio. Higher costs for parents consistently reduce the likelihood that families will choose center-based care and are a stronger predictor of type of care chosen than many measures of quality such as the child-adult ratio (Hofferth, 1991; Hofferth & Wissoker, 1992). Hofferth et al. (1991) found that many working parents spend substantial proportions of their income on child care. This can reduce the resources available for other purposes and place parents under stress.

Group size and child/adult ratio are also important quality factors. Several studies have shown that caregivers for larger groups of young children are less responsive, less socially stimulating, and more restrictive (Howes, 1983). Larger group size has also been found to increase distress, apathy, and potentially harmful behavior in infants and to negatively affect social competence, cooperation and involvement in tasks, verbal initiative, and cognitive test scores among older children (Clarke-Stewart, 1989; Holloway & Reichart-Erikson, 1989; Ruopp, Travers, Glanz, & Coelen, 1979). However, some studies have found that the child-adult ratio was a more important predictor than group size in center-based care (Burchinal, Roberts, Nabors,

& Bryant, 1996; Scarr, Eisenberg, & Deater-Deckard, 1994; Whitebook et al, 1989). In home-based care, group size has more consistently been shown to have negative effects with caregivers being less sensitive, less responsive, and engaging in less interaction with children when they are caring for larger groups (Howes, 1983; Stallings, 1980).

Several studies of outcomes for toddlers in center-based care have shown that lower child-adult ratios have a considerable positive impact (Allhusen, 1992; Ruopp et al., 1979; Whitebook et al., 1989). The NICHD Early Child Care Research Network data (1996) have shown that sensitivity of caregivers' responses for infant care are closely related to the child-adult ratio, with 1:1 ratio settings scoring considerably higher than others. This finding applies to both home and center-based settings. For preschoolers, results have been less consistent, however (Clarke-Stewart, Gruber, & Fitzgerald, 1994; Ruopp et al., 1979).

Another important factor is the amount of time children spend in care arrangements, although research findings are inconsistent as to its effect on child outcomes. Belsky and Rovine (1988) and Clarke-Stewart (1989) found that infants who experienced routine nonmaternal care for 20 or more hours per week during their first year of life were significantly more likely to be classified as insecurely attached to their mothers. Some have argued that spending long hours away from a baby may affect the mother's ability to be responsive to her child (Brazelton, 1985; Sroufe, 1988). Yet Roggman, Langlois, Hubbs-Tait, and Rieser-Danner (1994) found no significant association between time in nonmaternal care and attachment security. The NICHD Early Child Care Research Network (1996) has found that infants' attachment to their mothers is most strongly affected if they experience "dual risk," that is, long hours in child care combined with poor quality care at home. In a later study, the Research Network (1997) found that hours in care did not have a significant relationship on cognitive development for 2-year-olds.

Because of the importance of the question of day care quality and characteristics for child outcomes, the most in-depth information about day care quality will be obtained in the day care provider interviews. Presumably, our most accurate information about quality issues will come from the providers themselves as the primary caregiver may not observe these aspects first hand.

In Sections K through M of the 9-month parent interview, information will be obtained about the basic day care issues, including the age at which the child's alternate care began; the type of care the child receives (whether center-based, care by a relative, family day

care); the cost of the care; the group size and the adult:child ratio; and the number of different arrangements that the child is in at the present time.

Section N contains a set of questions about the relative importance of various considerations when selecting child care (N1), such as reasonable cost, a caregiver who is available flexible hours that suit your schedule, and a place that is close to a job.

Section O—Child Health

Although neonatal health is deemed critical for later growth and development, the physical well-being of the infant beyond the neonatal period continues to be of great importance. Risks to infants' health and physical well-being can continue beyond the neonatal period. As infants (even those who are unencumbered by ongoing physical problems) develop, their need for medical care continues in the form of routine immunizations and well-baby check-ups. Furthermore, well baby visits are important opportunities for education and pediatric intervention with families. Such visits may be the only chance that many parents have to speak with professionals about their concerns about their children's developmental and psychological well-being (Bornstein & Genevro, 1996). A by-product of well baby checks is that mothers often receive education about well baby care and this information may be related to certain maternal health-related behaviors, both for herself and for her child.

Because the stresses of serious medical illness and hospitalization can be traumatic for children, with potentially wide-ranging implications for growth and development, it is important to examine the occurrence of disability, serious illness and hospitalization on children's developmental outcomes. Section O includes questions that obtain information about the number of well-baby check-ups (O2) that the child has had as well as where these checkups occurred (O3) (i.e., whether at a private practice, and HMO, a clinic, etc.).

Another set of questions asks the primary caregiver about the types of any illnesses and/or injuries (O7-O35) the child has had that required medical attention or hospitalizations. In addition, if the child has been hospitalized for any reason, then the number of hospitalizations and the amount of time the child has spent in the hospital are obtained. There are also a number of questions that determine whether the child has been diagnosed with any serious medical or developmental problems or conditions (O36-O39) (such as cerebral palsy, Down syndrome,

asthma, heart defects) and whether the child (or the family) is receiving any special services due to this diagnosed problem.

Frequent illnesses during childhood can impact greatly on a child's development due to the missed days of participating in physical activity, socializing, and normal developmental behavior/activities. The validity of maternal reports about medically attended conditions has been shown to be both valid and relatively well-reported. The NICHD Study of Early Child Care reviewed medical records for as many cases of reported illness as possible. There was a high correlation between maternal report of both taking the child to the doctor and the condition of the child (as recorded in the medical records compared to the mother's report). GI, respiratory, and ear infections were the primary conditions that were reported in the NICHD study by 9 months of age. This is consistent with much of the earlier literature. After 9 months, the GI conditions tend to decrease. The ear infections continue to peak at about 18 months of age, also consistent with earlier literature. Respiratory conditions are the most prevalent throughout and are important to monitor because chronic respiratory systems are associated with significantly higher risk of experiencing an asthma attack, and higher risk of hospital admission due to asthma (Neville, et al, 1995).

Patterns for injury change rapidly with the developmental status of the child; however, falls are the most common cause of injury for either the first 9 months or toddler period. Injury reports increase as the child ages. Other studies show that in the early period, falls are often due to caretaker issues such as dropping the child or leaving the child on inappropriate surfaces (and hidden abuse—which may be coming from a fall). As the child becomes more mobile, the falls are generally associated with the environment (such as stairs, furniture surfaces, etc). These findings are also consistent with the results from the 1988 Child Health Supplement. Asking specifically about the "most serious injury" is consistent with WHO procedures. It is also expected that only more serious injuries would be recalled in any case.

Because of the time constraints, specific information about the most prevalent illnesses (e.g., respiratory, GI/diarrhea, and ear infections) and injuries should be explicitly asked about. For each of the conditions, we want to know a minimum: Has the child ever had the condition, has the child had the condition in the last 3 months, and how old was the child when the condition was first diagnosed.

Otitis deserves more thorough questioning because of its prevalence and importance for language development. Otitis media is the most frequent diagnosis for children at visits to

physicians' offices, as well as the most common reason for outpatient use of antimicrobials (Schappert, 1992; McGraig, 1995). It has been estimated that by age three, about three-quarters of children will have had at least on episode of otitis media, and more than one-third will have had recurrent infections (defined as three or more episodes) (Klein, 1994). The most prevalent complication of otitis media is conductive hearing and is due to fluid in the middle ear. While the hearing loss is usually temporary, it may impair children's cognitive, language, and emotional development (Paradise, 1981; Bluestone, Klein, Paradise, et al, 1983). One longitudinal study on the long-term effects of otitis media indicated that duration of middle ear eddusion in the first 3 years of life was associated with lower scores on tests of cognitive ability at age 7 (Teele, Klein, Chase, et al, 1990).

The question on hearing screening in the birth hospital or following discharge was devised *de nova*. Preliminary estimates suggest that by the year 2000, more than 25 percent of all newborns—not just low weight or other high risk babies—will have their hearing tested soon after birth, or, for those in extended NICU stays, just prior to discharge home. Those infants who do not "pass" the initial hearing screening in the hospital are referred for "diagnostic" hearing tests; after going home. Also, any infants who were not screened in the hospital and who are observed not responding to speech or sounds at home will often be tested by trained audiologists/otolaryngologists in the first 6-9 months of life. Studies are now demonstrating that early diagnosis and intervention for hearing impaired infants is crucial to language acquisition, providing that hearing aids are fit or other effective strategies are utilized.

Regarding apnea monitoring, NIDCD has findings from a population-based study of low birth weight children—the Missouri study—that suggest that those selected for apnea monitoring have delays at 18 months (compared to birth weight matched control infants). Results are based on the Denver II Developmental Screening Exam (Hoffman, H.R., MacTurk, et al, 1988). The areas of developmental delay are some of those of primary interest in ECLS-B. Information on the use of home apnea monitors is particularly relevant for MLBW and VLBW babies and can be used to document changes since 1988.

Section O also contains several questions on the child's health insurance (O41-O51). The number and percent of children under 18 years old without health insurance coverage is estimated to be between 9 and 10 million (13-14 percent of children) (Bureau of the Census, 1996). The 9 to 10 million children include 2.8 million children under 6 years of age. The proportion of children who have had a period without health insurance is larger still (Cunningham and Hahn, 1994). Lack of health care coverage for children has been cited as an important factor

in delayed access to acute and preventive care (Spillman, 1992). Children without health insurance have fewer immunizations and are at increased risk for delaying early treatment of health problems that may lead to complication requiring hospitalizations (Maureer, 1993; Braveman, Olvia, Miller et al, 1989). Children without health insurance are also less likely to have seen a doctor in the past year and have fewer physician visits (Cornelius, 1993). Moreover, children who have had a period of health without health care coverage are less likely to have had a regular source of care (Kogan, Alexander, Teitelbaum, et al, 1995).

Further, the recently legislated Children's Health Insurance program (CHIP) was designed to provide health insurance to children not covered by either Medicaid or another program. This survey will be among the first to assess the impact of this program in states that have enacted the program. The survey will also provide a rare opportunity to assess longitudinally the continuity of health care coverage.

Section P—Family Health

In Section P, there are questions that address different aspects of the general status of the family's health. The first set consists of only 1 question: whether there are any other household members in the family with physical problems or disabilities (P1). A household member with a disability can have a negative impact on child outcomes. Household members with disabilities require greater attention and caregiving from their families. As a result, the nondisabled children may suffer from the availability of only a limited amount of attention and caregiving. Likewise, the nondisabled children may be expected to contribute to the caregiving of a disabled member, thus placing an unfair burden on young children.

Secondly, a major emphasis in this section is on maternal health (P2-P11) with the principal data collection point occurring at the 9-month interview with follow-up information being obtained at the 18-month interview. At the time of the 9-month interview, information will be obtained about the mother's current health status using a small set of questions that ask her to rate her current health status (as excellent, good, etc.), whether a health problem prevents her from or limits her ability to work at a job, and whether and where she receives routine medical care. Mothers will also be asked about her current smoking habits, and alcohol intake, if any.

Additionally, maternal mental health status has an impact on maternal childcare activities. Maternal depression (P12-P14), for example, can have profound and pervasive

negative effects on child outcomes. High levels of depression interfere with daily functioning and therefore interfere with parenting and caregiving activities thus leading to poorer child outcomes. For example, children of depressed parents show high levels of both externalizing (i.e., aggressive) and internalizing (i.e., anxious or depressed) behavior problems with concomitant problems in social competence and academic performance. Therefore, mothers will be asked about their mental health status, including depression and substance use. It can be hypothesized that the onset of maternal depression early during the child's infancy would have more profound effects upon the child, due to inadequate nurturance, it is important to assess maternal mental health early in the child's infancy. These data will then be updated at the time of the 18-month interview.

Section Q—Household Food Sufficiency

Adequate nutrition (Q1-Q16) is also critical for children's growth and development. Malnutrition can lead to failure to thrive and may be associated with such physical problems as iron-deficient anemia and with deficits in intellectual and socioemotional development (Dwyer & Argent, 1990). Inadequate nutrition in infancy, a time of rapid brain growth, can lead to intellectual impairment (Balazs, Jordan, Lewis & Patel, 1986; Sewel, Price & Karp, 1993) and decreased visual and physical exploration of the environment (Barrett, Radke-Yarrow & Klein, 1982; Cravioto & Arrieta, 1986).

Although inadequate caloric intake is a major cause of malnutrition, it can also be due to dysfunctional feeding interactions, colic, and, sometimes neglect or outright abuse. Regardless of its cause, undernourishment that leads to failure to thrive and poor growth can have persistent and direct effects on later physical, cognitive, and socioemotional development. Malnutrition can also have indirect effects in that undernourished children can be apathetic and lethargic, which can interfere with the child's competent exploration of the environment, establishment of peer relationships and lack of emotional expression. In addition, such lack of socioemotional responsiveness can, in turn, interfere with the ability of caretakers to provide positive interactions and a stimulating environment for the child.

Children of low-income or poverty-level families, children of adolescent mothers, and children whose parents are receiving welfare may be at a greater risk of underourishment. Furthermore, because of current efforts at welfare reform and cutbacks in federal funding of food stamps, children are at even greater risk of undernourishment with its negative implications for

physical well-being. Clearly, the need for repeated assessments of children's physical well-being at multiple time periods becomes important for evaluating the adequacy of child nutrition.

Items obtaining information about these issues have been contributed by USDA. This series consists of 16 items and comprises Section Q, Household Food Sufficiency. (Additional items obtaining information about breastfeeding and early formula feeding and related issues can be found in Section B.)

Section R—Social Support

A supportive social network can mitigate stressful life events, the stresses of daily living, and the stresses of parenting. Support for parenting is an aspect of marital quality that has been found to affect the quality of parenting provided to the child as well as affecting the child's security of attachment (Belsky & Isabella, 1988; Goldberg & Easterbrook, 1984; Isabella & Belsky, 1985). Marital conflict, on the other hand, is associated with child behavioral problems and emotional disturbances, problems with interpersonal interactions and poor academic performance as reflected in poor grades and teacher reports. And, the greater the frequency of marital conflicts, the more difficulties children have (Cummings & Davies, 1994).

More generally, the more social support the primary caregiver has, the more likely the child is to form a secure infant-mother attachment (Crockenberg, 1981). In addition, among African-American families, mothers with a larger support network were found to be more responsive in interaction with their infants and provide more stimulation than mothers with smaller social networks (Burchinal, Follmer, & Bryant, 1996). On the other hand, among unemployed mothers, lack of social support is related to increased depressive symptomatology (Hall, Williams & Greenberg, 1985). In addition, the child's grandparents may play a significant role in providing social support to the child (Jendrek, 1994). This support can be extensive, as in the case of a custodial relationship in which the grandparent is the child's legal guardian or living with the child's family as part of an extended family. The grandparent may also be the major provider of day care while the child's primary caregivers work during the day.

Because the social support network of the family is so important for child outcomes, the primary caregiver will be asked two sets of questions. One is a small set of questions about sources of support (R1-R5) when faced with emotional problems, financial problems, parenting problems and in the case of an emergency. The importance of grandparents (that is, the

respondent's own parents) will be investigated through a set of questions that ask the caregiver to describe the quality of the relationship with the grandparents (R12 and R13) and how much or little s/he wants to be like them. Because the social support network can be an important mitigating factor in the stressful transition to parenthood, these questions will be asked at the 9-month interview, when this transition is still occurring. Updated information about the social support network will be obtained again at 18 months.

The age of the respondent's biological mother and father (R6-R8 and R9-R11) (the sampled child's grandmother and grandfather) is also asked for. If the grandmother has already died, then the length of time since death and age of death is asked for. The goal is to allow for calculation of age when the sampled child's mother and father were born. Should ECLS-B be followed up over the long-term, future researchers may be able to test the relationship between reproductive age of the maternal grandmother and grandfather on the longevity of the grandchildren. Specifically, Gavrilov and Gavrilov (1997) have hypothesized from biological theories of aging that human parental age at reproduction has a long-term independent life-shorting effect on offspring longevity. ECLS-B can provide insights on these questions in the future, particularly since it goes beyond existing datasets in the richness of data on SES, parenting, and other mediating factors. Such research is not only of great scientific interest, but it is also of practical important when one considers the growing trend toward childbearing at older ages in modern societies.

Section S—Community Support

An important aspect of neighborhood quality and resources is community support, which may influence child outcomes through an indirect pathway, for example by supporting parenting practices and parental psychological well-being. Affluent communities are more likely to have a larger number of formal and informal organizations that offer varying types of support. Libraries, for example, often have storytelling circles for toddlers and preschoolers, computer classes for young children, literacy classes for adults. Some school districts offer organized after school programs for latchkey children. Some churches have extensive community programs accessible to all ages. County centers may offer parent training classes as well as other continuing education programs. Community action groups active in the neighborhood can also be a source of support for residents, for example Neighborhood Watch programs bring residents together to increase neighborhood safety. Neighbors and family friends, too, can provide social support by watching out for each other's well-being and the well-being of each other's children.

In addition, the availability of safe places for children to spend recreational time within the neighborhood, at parks, pools, playground and ball fields, is of obvious direct benefit to children as well as to parents by reducing the demands of constant caregiving.

Because the opportunity for community support may interact with child and family variables, it is important to obtain such background information as socializing with friends and neighbors (S1), attendance of religious services (S2), and parental membership in community organizations (S3). Children at the age of 1 year, at the threshold of critical developmental milestones, are just beginning to venture out with their caregivers into the community, for example to playgrounds and perhaps stocking up on picture books at the library.

Finally, questions about receipt of services (S4), such as job training, transportation subsidies, housing subsidies and income assistance will be asked because of the critical contribution of each to the very basic needs of family well-being.

Section T—Family Routines

Family routines provide a predictable structure to a child's day. Routines and the regularity of family life (T1-T6) have been found to play an important role in educational and behavioral outcomes among school-age children (Maccoby & Minookin, 1992). Family routines, for example, may provide family members with a source of stability and predictability that is a helpful support during periods of stressful transitions (Boyce, Jensen, Sherman & Peacock, 1983).

Children benefit from routines in several ways. Families with predictable routines such as regular meals and bedtimes, were more likely to show interest and participating in preschools among low-income African-American children enrolled in Heat Start (Keltner, 1990). Routines may also be associated with relatively stable conditions within a family and may increase the child's ability to predict daily routines. Stability has also been found to be associated with secure infant-mother attachment and the maintenance of security across time (Vaughn, Egeland, Sroufe & Waters, 1979). In addition, the work of Nelson (K. Nelson, 1978), suggests that routine daily activities form the basis of event representations which, she claims, become the basic building blocks of cognitive growth. Event representations of predictable routine daily activities, therefore, are the foundation for the later developing symbolic representation in Nelson's theory of event knowledge. The predictability of routine daily events may also be related

to the development of future oriented processes such as intentionality, expectation, goal setting, and planning (Haith, Benson, Roberts & Pennington, 1994).

One of the most prominent of future-oriented activities is planning. Planning is a cognitive skill that is crucial to adaptive functioning in many domains, most notably academic performance (Gauvain, 1997). Parents who are predictable in their behaviors and who demonstrate strong planning abilities in their routine activities may facilitate the development of future-oriented behavior in infants (Benson, 1994)) and later planning skills in their children (Palkovitz, 1997).

Routines that may be important for infants and young children are regular routines for meals and snacks, and regularity in afternoon nap and evening bedtimes. For example, a predictable bedtime routine may be especially helpful for infants with temperamental difficulty in adapting to changes in routines by helping the baby learn to anticipate the bedtime event. And, learning how to go to sleep may help the infant learn emotional self-regulation. As an index of household predictability and stability of routine caregiving events, the primary caregiver will be asked about the frequency and stability with which the family engaged in certain routine activities with the child. These questions will be asked at the 9-month interview, because it is a time when the initial disruption of the newborn period has subsided and new family routines are being established. These questions will be updated at the 18-month visit, marking the increased participation of the child in these routine activities.

Section U—Biological Father's Information

Most information on resident fathers will be collected in a self-administered father questionnaire at the baseline 9-month interview. However, some key variables are proposed for follow-up interviews with mothers, in order to gather subsequent information about fathers' contributions to child rearing. After a set of questions that establish the residential status of the child's biological father (U1-U5), information is obtained about non-resident biological fathers' age (U6), race and ethnicity (U7-U9), and his education (U10-U12).

Particular attention is paid to the biological father's employment status and current occupation (U13-U29). The relationship between fathers' employment status and child well-being has not been as widely studied as maternal employment. However, it is expected that children will be better off when their fathers are employed because of their contribution to

household finances. Because of the strong societal norm for men to take on the role of family provider, employed fathers may also be more active participants in the family and child rearing when they feel they are fulfilling their roles and obligations. Some research has indicated that employed fathers are more involved with their children than unemployed fathers (McAdoo, 1988; Danziger & Radin, 1990; Elder & Caspi, 1988; Hawkins, 1992; Wilson, 1987). On the other hand, there is some evidence that fathers with restrictive work schedules or very stressful jobs tend to be less involved with their families (Gerson, 1993; Repetti, 1989, 1994).

Further information will also be collected from mothers about nonresident biological fathers (U30-U44). Data will be obtained from the mother about the level of contact and involvement nonresident fathers have with their children. Researchers have found that children of more involved fathers develop more balanced gender expectations and have more positive cognitive and socioemotional outcomes than other children do (Coltrane, 1995). Also, in a study that included a sample of low-income, urban African American fathers (or father figures) and their 3-year-old children, fathers' parenting satisfaction, employment and level of nurturance (as measured by videotaped play observation) were associated with better cognitive and language development among children, even after controlling for maternal age and education (Dubowitz, & Starr, 1996). Many studies suggest that the relationship between an absent parent and his child is associated with positive outcomes (Marsiglio, 1995). Moore et al. (1996) found that the negative effects of divorce were mediated by contact with the absent parent; for boys, they found no significant association between divorce and high school completion or anti-social behavior if the relationship with the absent parent was accounted for. However, Greene and Moore (1996) were unable to find a relationship between father visitation and child outcomes. To characterize the involvement of nonresidential fathers, information will be collected about his geographic proximity to the child, and whether the nonresidential father has assumed legal responsibility for the child by acknowledging paternity or providing child support.

Child support is an important issue related to nonresident fathers, because of its contribution to the financial well-being of children, especially low-income, female-headed families (Garfinkel & McLanahan, 1994; Marsiglio, 1995; Nord & Zill, 1996a, 1996b). Greene and Moore (1996) also found that both informal and formal means of child support by absent fathers is associated with positive child outcomes.

Section V—Mother's Education, Employment, and Income

The effect of maternal employment (V1-V30) on family life and child characteristics is a matter of considerable debate (Parcel & Menaghan, 1994a, 1994b). There is some evidence that early maternal return to work after the birth of a child has a negative impact on child outcomes (Belsky & Eggebeen, 1991). Other researchers have found mixed results (Desai, Chase-Lansdale, & Michael, 1989; NICHD Early Child Care Research Network, 1996b; Smith, 1997). It does appear, however, that maternal role satisfaction, that is her satisfaction with the balance she has achieved between working individual and mother, is a stronger and more consistent predictor of child outcomes than is simple maternal employment status, with maternal conflict about roles being associated with poorer child outcomes (Zaslow, Ravinovich & Suwalsky, 1991).

From a practical point of view, maternal employment may reduce mother's time for childcare activities as well as for housekeeping activities. It may also increase stress levels in employed mothers by increasing their workload and by increasing their concern about the adequacy of substitute caregiving. On the other hand, the increase in income may also reduce stress and at the same time improve family well-being.

A series of questions collect information about current maternal employment status, the number of hours the mother works per week, whether she receives job training, how old the child was when she went back to work, her reasons for going back to work (or not working) after the child was born.

In addition, a small number of questions obtain information about the mother's initial intentions (V31, V32, V34), at the time of the child's birth, about returning to work, for example how old did she want the child to be before she returned to work. Then the mother is asked what her primary reason was for (or not) returning to work (V33).

Because maternal employment is an influential variable for family well-being, maternal well-being and child outcomes, it is important to obtain information about maternal employment history. Because employment may vary over time, these data will be obtained at both phases of the study

Section W—Welfare and Other Public Transfers

Receipt of public assistance (W1-W12) has been proposed for measurement at both the 9- and 18-month time points, because it reflects a serious level of poverty and the status of receipt may change over time. For many children, poverty is not a persistent fact of life but a temporary event—one out of every three children experiences poverty for a single year (Duncan, 1991). In analyzing patterns of poverty among children under age four for the subsequent 15 years, Duncan and Rodgers (1988) found that African-American children lived in poverty for an average of 5.5 years, while non-African American children lived in poverty 0.9 years on average. The duration of poverty has been found to have a powerful effect on both cognitive development and behavior among children under age 5 (Duncan, Brooks-Gunn, & Klebanov, 1994; Moore, Morrison, Coiro, & Blumenthal, 1994).

Poverty and welfare receipt are higher among families with young children (National Center for Children in Poverty, 1996). Receipt of TANF benefits, particularly if receipt is long-term, reflects a high level of economic deprivation and generally low human capital on the part of the mother (Bane & Ellwood, 1983; Driscoll & Moore, 1996; Zill et al., 1991). McLloyd and Wilson (1991) found that poor single mothers were substantially more likely to be depressed and to provide a non-stimulating environment to their children, ages ten to seventeen. Children of welfare families demonstrate poorer outcomes across a variety of domains compared to more advantaged children (Moore, Krysan, Nord, & Peterson, 1991). On the other hand, net of TANF status and income, receipt of associated benefits such as food stamps, WIC, and Medicaid should have positive implications for children's physical health and development. Therefore information about receipt of these programs and services is collected using the questions in Section W.

Section X—Household Income and Assets

There are many ways in which parental income level may affect the attainments, health, and behavior of children (Children's Defense Fund, 1994; Duncan & Brooks-Gunn, 1997; Hill & Sandfort, 1995; Huston, 1991; Korbin, 1992). Family income can affect children because money can be used to buy things that promote optimal growth and development. For instance, money can purchase food and health care for adequate nutrition and positive health outcomes. Money may provide resources such as books, toys, and musical instruments that stimulate cognitive development. Money also makes it more likely that families can purchase high quality childcare. Lack of resources to purchase toys or good quality childcare may mean that low-

income children do not have as many stimulating experiences as do children in more affluent families.

Household income is a critical determinant of the family's material standard of living, neighborhood and housing quality, opportunities for stimulating recreation and cultural experiences, and the stress and psychological well-being of the parents. Because of its wide ranging implications and its potential variability across time, measurement of household income (X1-X4) has been proposed for both time points, 9-months and 18-months.

Parents themselves may be influenced by low income, such that their lives are more stressful, conflictual, and unpredictable (Conger & Elder, 1994; McLoyd, 1990). Economic instability is also associated with marital conflict, which may have a negative influence on children's experiences (Gordon, Osborne, & Conger, 1997). Parents' emotional health may be compromised, resulting in more depressive, irritable, or volatile moods. Stressful lives and less positive emotional health may themselves influence the day-to-day interactions between parents and children. So, for example, low-income parents may exhibit more inconsistent or harsh behavior with their children, or they may be less emotionally available for their children.

On the other hand, some argue against the causal role of income (Mayer, 1997). Indeed as often the case for measures of family background, there is substantial selectivity into being low income (Driscoll & Moore, 1996), and risk factors tend to co-occur. However, a substantial body of research suggests that poverty has both short- and long-term effects on children's development, particularly deep and sustained poverty (Duncan & Brooks-Gunn, 1997). In addition, income volatility has been found to impair children's development and adjustment to school. Duncan (1991) found that many households with children under age 5 experience extreme ups and downs in the amount of money available to the family, especially as a result of divorce or remarriage. Fluctuations into and out of poverty have been shown to be associated with poorer home learning environment, lower reading and math scores, and greater behavior problems in children (Moore, Morrison, Zaslow, and Glei, 1994).

Since the 1980s, the United States has been experiencing substantial economic growth as measured by both per family income and wealth. Very little research has actually included assets in looking at child health and development, because few data sets have had this information. Recent research suggests that family economic conditions in early childhood have the greatest affect on achievement, especially among children with low income (Duncan, et al.,

1998). Wealth accumulated is an important aspect that helps to shape that life chances of children, an can signal a family's potential investment in the human capital of their child(ren).

Some of the best work emerging in wealth studies is done by Edward Wolff who has pointed out that families receiving similar income can experience different levels of economic well-being depending on assets such as housing and consumer durables (e.g., vehicles). In their book, *Black Wealth/White Wealth*, Oliver and Shapiro (1995) demonstrate that even when blacks and whites display similar characteristics (e.g., by education and occupation), a difference of $43, 143 in home equity and financial assets remains. Financial assess that contribute to a family's net worth helps to secure a family's well-being, and provides resources to help survive economic and personal down-turns. By ignoring wealth, studies that rely only on income measures will seriously underestimate inequalities, particularly racial inequalities where substantial wealth disparities have already been documented.

Ownership of a house (X6) is important to capture, as is vehicle ownership (X9). Stocks and bonds (X10) help to capture a family's engagement in the market economy and the associated risks, and effectively separates the middle from the upper class. Savings and checking accounts (X11) capture a family's liquidy and ability to weather short-term economic shocks.

Section Y—Woodcock-Johnson Word Identification Test

We propose administering the Word Identification subtest of the Woodcock Johnson-Psychoeducational Batteries to parents, at the end of the 9-month visit. The updated edition of the Woodcock-Johnson Battery (WJ-R) is a carefully constructed, normed, and widely-used test battery. The set of individually administered tests is designed to assess the intellectual and academic development of individuals from preschool through adulthood (Woodcock & Johnson, 1989; Salvia & Ysseldyke, 1991). National norms for U.S. preschoolers and kindergartners as well as older children and adults are available for this component subtest and establishes a broad standardization sample with which to compare the ECLS-B parents. Other advantages of this test battery are the availability of alternate forms of the subtests and a Spanish-language version of the test, which has been normed on a Hispanic population. The internal consistency reliability of the subtest with adults averages .91.

The main reason for administering this test is that parent's word knowledge and general cognitive ability have proven in numerous studies to be very important predictors of the

child's cognitive and language development. In fact, once parental education is controlled, there is still a large amount of variance in children's later development that is explained by the parent's cognitive ability. Although we feel it is very important to precisely measure this, we also recognize the burden such a comprehensive test would place on the respondents and the limits of time and cost in the 9-month home visit as planned. The Letter-Word Identification test, involving a test of the parent's word decoding skills, provides a brief and low-cost alternative that correlates very highly with more comprehensive measures of reading comprehension and cognitive ability. While it is not a broad measure of reading ability, the scores on this subtest are so highly correlated with other tests of reading skills that it serves as a "proxy" indicator of this critical construct.

This test was recommended to us by Catherine Snow, one of the country's pre-eminent researchers in early language development, who uses this in her own research with parents. Even though this is admittedly a "quick and dirty" measure of the parent's language skills, the importance of this construct and the relatively low additional burden placed on respondents justifies the cost. For approximately 3 extra minutes added to the home visit, we might be able to obtain another 10-15 percent of the variance explained in children's subsequent language ability. Finally, if it is given at the 9-month home visit, rather than the 18-month home visit, it become important prospective data that can support a causal connection between the parent's reading ability and the child's subsequent language skills. Thus, within the context of a prospective, longitudinal study, an earlier test of the parent's ability becomes a powerful predictor of the child's ability before the child has fully developed that ability.

The Letter-Word Identification items administered to parents consist of words that appear in large type on the pages of the test book, six to a page, in increasing levels of complexity. Rather than using the test booklet, we will have each page of the test book reproduced (assuming the publisher's permission) on cardstock, with the correct pronunciation of the words indicated on the back of each card. Only the primary caregiver will be administered this test and we will work to refine the instructions so as to reduce any potential negative reaction.

During the past pretest/cognitive testing we administered the Woodcock-Johnson Letter-Word Identification Test to parents and found that it was generally accepted by most parents. The test required approximately 3 minutes to administer and while parents were curious about why it was administered, most did not reveal negative reactions. The one or two parents who did show negative reactions were mainly curious about the test and we feel their participation in the study would not have been adversely affected by its inclusion. In general, we

speculate that the slight negative reactions to the test could have been minimized by having a better set of instructions to orient the parent to the purpose of the test, and these will be developed prior to the field test.

For individuals with disabilities (sight or hearing), we would find an appropriate accommodation, such as cards on Braille for sight-impaired parents. We would consult with specialists in other disabilities to determine which other accommodations are warranted (many hearing-impaired parents are able to speak aloud using reasonably good diction, so this may not be a problem for them, but again we will check with experts). In terms of Spanish-speaking parents, we would need to make a decision about whether to test just in English or to give the Spanish version of the test (either in combination with the English or solely). We would work with NCES to determine the most appropriate method for administering this test to non-native English speakers, including those whose primary language is neither English nor Spanish.

PROTOCOL FOR THE 9-MONTH PARENT INTERVIEW
WOODCOCK-JOHNSON WORD IDENTIFICATION TEST

The Woodcock-Johnson test will be administered at the end of the 9-month parent interview. Interviewers will show respondents lists of words (6 words per page) from a booklet, asking the respondent to read and say aloud each word. Interviewers will progress down the lists until 6 items in a row are missed or the end of the booklet is reached. The task lasts approximately 3 minutes.

In the cognitive testing, we had the interviewers read the following directions to the respondent before beginning the task. All of the respondents understood the directions and found them to be clear and helpful.

> "We have one more activity that we would like you to help us with. It is a word-identification task and should take no more than 5-minutes to complete. We are going to show you a list of words and then we will ask you say each word aloud. Some of the words will seem very easy while some will seem difficult. Just read the word and say it out loud."

The starting point for parents will vary depending on their education level, as follows: Grades 3 to 4 start at Item 24, Grades 5 to 9 start at Item 30, and parents with education of Grade 10 and higher start at Item 36. There are basal and ceiling rules that can be built into a CAPI version of the test administration. The interviewer must test by complete pages (six words to a page) until the 6 lowest-numbered items administered are correct, or until the page with item 24 has been administered. Once this basal has been established, the interviewer continues administering complete pages until the 6 highest-numbered items administered are failed or until the page with the last test item has been administered.

The test is scored by summing all items that are passed, and then adding the number of items that were not administered below the basal. These raw scores then can be placed in a lookup chart to determine W-ability scores, grade equivalents, and standard scores. These latter scores are useful because they indicate how well the individual has done relative to the larger population after adjusting for age.

This test would be administered only once, at the 9-month home visit. As discussed above, it is incorporated into the parent interview, as section Y.

Early Childhood Longitudinal Study

Birth Cohort 2000

9-Month Parent Instrument

9-MONTH PARENT INTERVIEW
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Sources for Items in the 9-Month Parent Interview

CENSUS – Census 2000
CESD – Center for Epidemiologic Studies–Depression Scale
CPS – Current Population Survey
CTS – Combat Tactics Scale from National Surveys of Family Violence
DADS – Developing A Daddy Survey
DAS – Dyadic Adjustment Scale
ECLS-K – Early Childhood Longitudinal Study-Kindergarten Cohort
EHS – Early Head Start Study
FACES – Family and Child Experiences Study (Head Start study)
FF – Fragile Families Survey
HOME – Home Observation for Measurement of the Environment
JOBS – JOBS Study (Job Opportunity & Basic Skills training program)
JORDAN – Authoritarian Family Ideology
KIDI – Knowledge of Infant Development Inventory
MN-CDI – Minnesota Child Development Inventories
NCCS – National Child Care Survey
NCHS – National Center for Health Statistics
NEILS – National Early Intervention Longitudinal Study
NHES – National Household Education Survey
NHIS – National Health Interview Survey
NLSY – National Longitudinal Survey of Youth
NMES – National Medical Expenditure Survey
NMIHS – National Maternal and Infant Health Survey
NSC – National Survey of Children
NSFG – National Survey of Family Growth
NSFH – National Survey of Families and Households
OSEP – Office of Special Education Programs
PRAMS – Pregnancy Risk Assessment Monitoring System
PSID – Panel Survey of Income Dynamics
PSID-CDS – Panel Survey of Income Dynamics-Child Development Survey
SNOW – Catherine Snow
SSSII – Social Support Scale II
USDA – US Department of Agriculture, Food & Consumer Service
W-J – Woodcock- Johnson

9-MONTH PARENT INTERVIEW

SECTION A – INTRODUCTION

You and (CHILD) (and (TWIN)) have been selected to take part in the Early Childhood Longitudinal Study. The National Center for Education Statistics and other U.S. government agencies with responsibility for the health, education, and well-being of the nation's children are the sponsors of this study. I have some questions for you that ask about (CHILD)'s (and (TWIN)'s) early experiences. The information I collect in this interview will be extremely valuable in understanding how the early experiences of babies affect their learning and development. The information you provide will be kept completely confidential and private as required by law.

[For this interview, I will first ask questions that collect information specifically about (CHILD) and general questions about you and your household. Once those questions are finished, I will need to ask some questions that collect information specifically about (TWIN). There will not be as many questions for (TWIN), since I will not need to ask the questions about you or your household./As I mentioned earlier, now I need to ask some questions specifically about (TWIN). These questions will not take as long as the first round of questions, since I have already asked the general questions about you and your household.]

Before we begin the interview, I would like to verify some information about (CHILD).

A1. ECLS-K I have recorded (CHILD's FIRST, MIDDLE, and LAST NAME) as (CHILD)'s full name. Is this correct?

ALSO VERIFY SPELLING.
MAKE CORRECTIONS TO NAME BELOW.
IF NO MIDDLE NAME, ENTER 'NMN.'

Current information: [CHILD'S FIRST NAME]
[CHILD'S MIDDLE NAME]
[CHILD'S LAST NAME]

FIRST NAME: [_____]
MIDDLE NAME: [_____]
LAST NAME: [_____]

YES	1	(GO TO A2)
NO	2	(MAKE CORRECTIONS)
DON'T KNOW	98	(GO TO A2)
REFUSED	99	(GO TO A2)

A2. ECLS-K I have recorded (CHILD)'s birth date as (MONTH, DAY, YEAR). Is this correct?

YES	1	(GO TO A4)
NO	2	(GO TO A3)
DON'T KNOW	98	(GO TO A4)
REFUSED	99	(GO TO A4)

A3. What is (CHILD)'s birth date?

ECLS-K

|__|__| |__|__| |__|__|__|__|
MONTH DAY YEAR

DON'T KNOW ..... 9998 (GO TO A4)
REFUSED ..... 9999 (GO TO A4)

A4. ASK IF NOT OBVIOUS: I have (CHILD) recorded as (male/female). Is that correct?

ECLS-K MAKE CORRECTIONS TO GENDER BELOW OR PRESS ENTER TO ACCEPT CURRENT GENDER.

MALE 1
FEMALE 2
DON'T KNOW 98
REFUSED 99

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SECTION B – FEEDING AND DEVELOPMENTAL MILESTONES

IF RESPONDENT IS BIOLOGICAL MOTHER, ASK B1. ELSE, GO TO B5.

B1. Now I have some questions about feeding your child. Did you ever breast-feed (CHILD)?
USDA

YES	1	(GO TO B2)
NO	2	(GO TO B6)
DON'T KNOW	98	(GO TO B6)
REFUSED	99	(GO TO B6)

B2. How soon after birth did you begin to breast-feed (him/her)?
USDA PROBE: If you pumped your breasts because (CHILD) was not able to nurse, count from the day you began pumping.

|__|__|
DAYS

SAME DAY OF CHILD'S BIRTH	00
DON'T KNOW	98
REFUSED	99

B3. Are you still breast-feeding (CHILD) now?
USDA

YES	1	(GO TO B5)
NO	2	(GO TO B4)
DON'T KNOW	98	(GO TO B4)
REFUSED	99	(GO TO B4)

B4. For how long did you breast-feed (him/her)?
USDA

|__|__|__| |__|__|
NUMBER UNITS

DAYS	1	(GO TO B6)
WEEKS	2	(GO TO B6)
MONTHS	3	(GO TO B6)
DON'T KNOW	98	(GO TO B6)
REFUSED	99	(GO TO B6)

B5. During the past 7 days, was (CHILD) breast-fed, formula-fed, or fed regular cow's milk?
USDA CODE ALL THAT APPLY.

BREAST-FED	1
FORMULA FED	2
COW'S MILK	3
DON'T KNOW	98
REFUSED	99

IF B5 = 2 (FORMULA-FED), ASK B6. ELSE, GO TO B8.

B6. How old was (CHILD) when you began feeding (him/her) formula?
USDA

|__|__|__| |__|__|
NUMBER UNITS

DAYS	1
WEEKS	2
MONTHS	3
DON'T KNOW	98
REFUSED	99

B7. Do you use powder, concentrate, or ready-to-feed formula in the baby's bottle?
USDA CODE ALL THAT APPLY.

POWDER	1
CONCENTRATE	2
READY TO FEED	3
DON'T KNOW	98
REFUSED	99

B8. How old was (CHILD) when you began feeding (him/her) cow's milk?
USDA

|__|__|__| |__|__|
NUMBER UNITS

NOT YET	0
WEEKS	1
MONTHS	2
DON'T KNOW	98
REFUSED	99

B9. How old was (CHILD) when solid food was first introduced?
USDA

|__|__|__| |__|__|
NUMBER UNITS

NOT YET	0
DAYS	1
WEEKS	2
MONTHS	3
DON'T KNOW	998
REFUSED	999

B10. *Was this first solid food given in a bottle, infant feeder, or with a spoon?*
USDA

BOTTLE	1
INFANT FEEDER	2
SPOON	3
DON'T KNOW	98
REFUSED	99

B11. How old was (CHILD) when (he/she) was first given finger foods, such as Cheerios, teething biscuits, crackers, bread, noodles, rice, grits, tortillas, or potatoes?
USDA

|__|__|__| |__|__|
NUMBER UNITS

NOT YET	0
MONTHS	1
DON'T KNOW	998
REFUSED	999

B12. Is (CHILD) able to drink from a self-held cup?
MN-CDI

YES	1	(GO TO B13)
NO	2	(GO TO B14)
DON'T KNOW	98	(GO TO B14)
REFUSED	99	(GO TO B14)

B13. How old was (CHILD) when (he/she) began drinking from a self-held cup?
USDA

|__|__|__| |__|__|
NUMBER UNITS

NOT YET	0
MONTHS	3
NOT YET	4
DON'T KNOW	98
REFUSED	99

B14. Is (CHILD) able to feed (him/her)self?

MN-CDI

YES	1	(GO TO B15)
NO	2	(GO TO B16)
DON'T KNOW	98	(GO TO B16)
REFUSED	99	(GO TO B16)

B15. How old was (CHILD) when (he/she) started feeding (him/her)self?

MN-CDI

|__|__|
MONTHS

DON'T KNOW	98
REFUSED	99

B16. How old was (CHILD) when (he/she) started sitting up by (him/her)self?

MN-CDI

|__|__|
MONTHS

NOT YET	00
DON'T KNOW	98
REFUSED	99

B17. Is (CHILD) able to crawl on hands and knees?

MN-CDI

YES	1	(GO TO B18)
NO	2	(GO TO B19)
DON'T KNOW	98	(GO TO B19)
REFUSED	99	(GO TO B19)

B18. How old was (CHILD) when (he/she) started to crawl on hands and knees?

MN-CDI

|__|__|
MONTHS

DON'T KNOW	98
REFUSED	99

B19. Is (CHILD) able to pull (him/her)self to a standing position?

MN-CDI

YES	1	(GO TO B20)
NO	2	(GO TO B21)
DON'T KNOW	98	(GO TO B21)
REFUSED	99	(GO TO B21)

B20. How old was (CHILD) when (he/she) started to pull (him/her)self to a standing position?

MN-CDI

|__|__|
MONTHS

DON'T KNOW 98
REFUSED 99

B21. Is (CHILD) able to walk while holding on to something, such as furniture?

MN-CDI

YES ..... 1 (GO TO B22)
NO ..... 2 (GO TO SECTION C)
DON'T KNOW ..... 98 (GO TO SECTION C)
REFUSED ..... 99 (GO TO SECTION C)

B22. How old was (CHILD) when (he/she) was first able to walk while holding on to something, such as furniture?

MN-CDI

|__|__|
MONTHS

DON'T KNOW 98
REFUSED 99

9-MONTH PARENT INTERVIEW

SECTION C – CHILD TEMPERAMENT

Let's talk about (CHILD) and how (he/she) usually acts during an average day. Please think about (him/her) during the last two weeks. If (CHILD) was not generally healthy during the last two weeks, think back to the last two-week time period when (CHILD) was (his/her) usual self. The following questions ask about how often (CHILD) acted in a certain way.

C1. NLSY When (CHILD) sees a stranger or an unfamiliar animal, how often does (he/she) turn away or cry as if afraid? Would you say...

SHOW CARD C

Almost never, ... 1
Less than half the time, ... 2
Half the time, ... 3
More than half the time, or 4
Almost always? 5
DON'T KNOW 98
REFUSED 99

C2. NLSY When you leave the room and leave (CHILD) alone, how often does (he/she) become upset? Would you say...

SHOW CARD C

Almost never, ... 1
Less than half the time, ... 2
Half the time, ... 3
More than half the time, or 4
Almost always? 5
DON'T KNOW 98
REFUSED 99

C3. NLSY When (CHILD) hears an unexpected loud sound, how often does (he/she) cry or become upset? Would you say...

SHOW CARD C

Almost never, ... 1
Less than half the time, ... 2
Half the time, ... 3
More than half the time, or 4
Almost always? 5
DON'T KNOW 98
REFUSED 99

C4. How often do you have trouble soothing or calming (CHILD) when (he/she) is crying or upset?
NLSY [Would you say...]

SHOW CARD C

Almost never,	1
Less than half the time,	2
Half the time,	3
More than half the time, or	4
Almost always?	5
DON'T KNOW	98
REFUSED	99

C5. How often does (CHILD) wave (his/her) arms and/or legs during feeding? [Would you say...]
NLSY

SHOW CARD C

Almost never,	1
Less than half the time,	2
Half the time,	3
More than half the time, or	4
Almost always?	5
DON'T KNOW	98
REFUSED	99

C6. How often does (CHILD) get hungry at about the same time each day? [Would you say...]
NLSY

SHOW CARD C

Almost never,	1
Less than half the time,	2
Half the time,	3
More than half the time, or	4
Almost always?	5
DON'T KNOW	98
REFUSED	99

C7. How often does (CHILD) get sleepy at about the same time each day? [Would you say...]
NLSY

SHOW CARD C

Almost never,	1
Less than half the time,	2
Half the time,	3
More than half the time, or	4
Almost always?	5
DON'T KNOW	98
REFUSED	99

C8. Please rate the overall degree of difficulty your child would present for the average parent to
NLSY raise. Would you say...
NOTE: THE ANSWER CATEGORIES ARE DIFFERENT FROM PREVIOUS QUESTIONS.

SHOW CARD C8

Not at all difficult,	1
Not very difficult,	2
About average,	3
Somewhat difficult, or	4
Very difficult?	5
DON'T KNOW	98
REFUSED	99