The NICHD Study of Early Child Care and Youth Development

Findings for Children up to Age 4½ Years

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health
National Institute of Child Health and Human Development

Dear Fellow Parents,

Raising children is one of the hardest, but most important and rewarding things we do. The daily task of caring for children can be a challenging job in and of itself. Selecting persons and situations for child care can be even more difficult.

Child care is now a fact of life for many American families, and many parents now use child care from their child's infancy through kindergarten. More than 10 years ago, the National Institute of Child Health and Human Development (NICHD) launched the NICHD Study of Early Child Care and Youth Development (SECCYD) to investigate the relationships between child care and children's development. The study examines how differences among families, children, and child care features are linked to the intellectual, social, and emotional development and health of children. The study is about more than child care; it describes children's lives and development.

This booklet is for *all* parents: for those whose children are in child care on a full- or part-time basis, for those parents considering child care, and for parents whose children are not in any non-parental child care arrangement. We hope that this booklet will inform some of your decisions about child care and help you understand your child's development. We will continue to study the complex relationships among child care, families, and children and to make these results available to you as they are known.

Sincerely yours,

Duane Alexander, M.D.
Director, NICHD

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Major Findings

Major Findings from the Study

In the early 1990s, the majority of children began some non-maternal care by 6 months of age. Results from the NICHD Study of Early Child Care and Youth Development show that, in its demographically and ethnically diverse sample of more than 1,000 children, the average child spent 27 hours a week in non-maternal care over the first 4½ years of life. During the children's first 2 years of life, most child care took place in family homes with relatives or in child care homes; as children got older, more were in center-based care.

When it came to understanding how these experiences might influence children, knowing simply whether a child was or was not ever in non-maternal care provided little insight into a child's development. Children who were cared for exclusively by their mothers did not develop differently than those who were also cared for by others.

Quality, quantity, and type of non-maternal care were modestly, but not strongly, linked to the children's development regardless of family features.

Children who were cared for exclusively by their mothers did not develop differently than those who were also cared for by others.

- Children in higher **quality** non-maternal child care had somewhat better language and cognitive development during the first 4½ years of life. They were also somewhat more cooperative than those who experienced lower quality care during the first 3 years of life.
- Children with higher **quantity (total combined number of hours)** of experience in non-maternal child care showed somewhat more behavior problems in child care and in kindergarten classrooms than those who had experienced fewer hours.
- Children who attended child care **centers** had somewhat better cognitive and language development, but also showed somewhat more behavior problems in child care and in kindergarten classrooms than children who experienced other non-maternal child care arrangements.

Parent and family characteristics were more strongly linked to child development than were child care features. And, parent and family characteristics predicted some developmental outcomes that were not predicted by child care. For instance, children showed more cognitive, language, and social competence and more harmonious relationships with parents when parents were more educated, had higher incomes, and provided home environments that were emotionally supportive and cognitively enriched, and when mothers experienced little psychological distress.

Family and parenting experiences were as important to the well-being of children who had extensive child care experience as family and parenting experiences were for children with little or no child care experience.

The NICHD Study of Early Child Care and Youth Development (SECCYD)

During the past 30 years, increasing numbers of families in the United States have used non-parental child care. Such arrangements include care by relatives or in-home nannies, family child care homes, and center-based care.

The decision to use child care is rarely an easy one. How will non-maternal child care affect the child's development? How do parents know that their children are getting good care? What type of child care setting is best? Will being separated from the mother on a regular basis affect the child's relationship with her or with other family members?

With so many books, articles, talk shows, and other resources available to offer advice and recommendations, it's hard to find reliable, research-based information about child care. It's even more difficult when the advice of one "expert" disagrees with the recommendations of another.

The National Institute of Child Health and Human Development (NICHD), part of the National Institutes of Health (NIH) within the U.S. Department of Health and Human Services, began a study in 1991 to collect information about different non-maternal child care arrangements, and about children and families who use child care as well as those who do not. The result, the NICHD Study of Early Child Care and Youth Development (SECCYD), is the most comprehensive study to date of children and the many environments in which they develop. It provides reliable, accurate, research-based information about non-maternal child care and its links to children's development.

The findings will not answer all of your child care questions, but they will help you make more informed choices to meet the needs of your child and your family. They will also help you understand how your home environment and your parenting behaviors are related to your child's development.

What are the goals of the NICHD Study?

The major goal of the NICHD Study is to examine how differences in child care experiences relate to children's social, emotional, intellectual, and language development, and to their physical growth and health. Other goals of the Study[1] include:

- Describing the variety, stability, and changes in children's non-maternal child care experiences over time, including the child's age when first placed in child care, and the quantity and quality of care (for instance, how old were most children when they first entered child care? How many hours did most children spend in child care each week? What types of child care arrangements did children experience? How much time did caregivers spend interacting with children?)
- Identifying demographic and family characteristics associated with different patterns of child care use
- Comparing the development of children who were cared for primarily by their mothers to those who spent much of their time in non-maternal care
- Identifying the specific links between certain features of non-maternal child care (such as quality of care, hours each week in care, and type of care) and child development, while taking into account the important and well-documented roles of the family; in other words, identifying the exclusive link (or net effect) between child care and child development
- Determining whether associations between child care experiences and children's development were the same for children from different family backgrounds (such as for African American and white children, for children from rich and poor families, and for children receiving more and less sensitive parenting)
- Understanding how family characteristics (such as parents' emotional sensitivity, the quality of the home environment, parents' education, parents' psychological adjustment, and parents' attitudes and beliefs) are related to development for children who do and do not experience child care

How was the NICHD Study conducted?

The NICHD Study collected detailed information on the features of child care and on the experiences children have in different non-maternal child care settings. The Study also collected specifics on the families of the children, and on the children themselves. Researchers are using this information to understand how children's development is linked to their experiences in child care, in their families, and, as they get older, in school.

Since 1991, the Study has followed the development of children from the time they were 1 month of age. It was conducted in four phases, based on the ages of the children when the information or data were collected (see **Table 1**). As children grew older, some families did not continue their participation in the study for different reasons (such as no longer interested, moved away, etc.), which explains why the number of children is not identical across data collection phases.

The researchers collected data at 10 sites around the country. (For a map of the Study sites, go to **Appendix A—About the Families and the Sites Involved in the NICHD SECCYD**.) Families came from diverse demographic, economic, and ethnic backgrounds. Although the study was not "nationally representative" according to standards set by statisticians, the study population was very diverse and included children who were born healthy into a variety of backgrounds. By design, the study included single-parent households, families from minority ethnic backgrounds, parents with little formal education, as well as their counterparts.

The NICHD Study of Early Child Care and Youth Development (SECCYD) is the most comprehensive study to date of children and the many environments in which they develop.

TABLE 1 SECCYD Phases and Number of Participants

Year	Children's Age or Grade	Number of Children (and Their Families)
1991-1994	Phase I, ages 0 to 3 years	1,364 children enrolled in the Study
1995-1999	Phase II, through first grade	1,095 children remained in the Study
2000-2004	Phase III, through sixth grade	1,073 children remained in the Study
2005-2007	Phase IV, through ninth grade	Still calculating the number of families

As you read, you will notice numbers, like [1] or [45], next to certain words or sentences. These numbers match up with the SECCYD scientific article that supports an idea or concept. A list of these papers, by number, appears in **Appendix E—References**. The articles provide more detailed information about SECCYD research. In general, the articles are geared toward scientists, researchers, and health care providers; the articles provide more detailed information about SECCYD findings.

At age 1 month, the general characteristics of the study population were as follows (see **Appendix A** for more information):

- 40.0 percent of the children lived in families defined as poor or near-poor. (By age 4½ years, 23.0 percent were in such families, as a result of both the families moving above the poverty line and of families in poverty dropping out of the Study).
- 85.5 percent of the children had mothers who were married or partnered.
- 10.2 percent of the mothers had no high school diploma; 21.1 percent had a high school degree or equivalent; 33.4 percent had some college education; 20.8 percent had a college degree; and 14.5 percent had postgraduate education.
- 12.7 percent of the children were defined at birth by their mothers as black/non-Hispanic; 6.1 percent were Hispanic; and 4.8 percent were other minorities.

For more information on the families involved in the study, their general characteristics, and the sites at which data were collected, please see **Appendix A**.

What is child care?

NICHD researchers defined child care as **any care provided on a regular basis by someone other than the child's mother.** This description did not include occasional babysitting that was not a regular arrangement.

Children in any type of care for fewer than 10 hours a week were considered to be in exclusive maternal care.

When the Study began, the researchers did not all agree about which arrangements to include in the term "child care." Some felt that care by the father on a regular basis should be considered "child care" because that situation differed from one in which the mother had full-time care responsibility. Others argued that "child care" should include only care by people other than the parents.

Ultimately, the researchers decided to study all child care provided by someone other than the mother on a regular basis. These arrangements included care from the father or other relative, care from one caregiver (who was not related to the child) in the child's home, small group care in a caregiver's home, and center-based care.

The information presented here mostly describes results from birth through age 4½. Because most children age 5 and older are in school, their child care experiences change. Once all of the findings for school-aged children are collected and analyzed, those findings will be summarized in a separate booklet.

What did the NICHD Study measure?

Researchers describe what they measure using different names: characteristics, traits, variables, and qualities. In this booklet, we use the term *features* to mean all of these. The study also measured children's experiences as they related to the care they received from their parents and from child care providers.

Child care features and experiences[2,3] included (but were not limited to):

- Child's age when first placed in child care
- Type of child care (such as center-based care)
- Number of hours spent in child care each week
- Number of different types of child care that a child experienced
- Number of professionally pre-defined standards for quality that child care met
- Observed quality of the caregiving the child received

Family features and experiences[4,5] included (but were not limited to):

- Mother's education, personality, and psychological adjustment
- Father's education, personality, and psychological adjustment
- Economic resources
- Family's ethnic heritage
- Family structure (such as one or two parents)
- Quality of stimulation and interaction in the home environment
- Mothers' sensitivity to their children
- Mothers' cognitive stimulation during interactions with their children (for example, did the mother read to the child, did she encourage the child to talk and make sounds, did she name colors to the child?)
- Parenting beliefs and practices

What aspects of child development did the NICHD Study measure?

The features of child development that were assessed included (but were not limited to):

- **Cognitive and language development**—describes how children learn to think, respond, and interact with the world around them.
  - Important cognitive and language skills include attention, memory, language use, vocabulary, language comprehension, problem solving, reasoning, and strategies for acquiring knowledge.
  - These skills provide the foundations of reading and number/math knowledge; in addition, the Study measured specific literacy and number skills.
  - If something is cognitively stimulating, it encourages one or more of the skills listed above.
  - This booklet uses the terms "cognitive development," "cognitive skills," and "cognitive outcomes" to refer to this broad range of developmental milestones that make a child ready for the academic demands of school.
- **Social behavior**—describes how children interact with adults and with one another, as well as how well they manage their own behavior.
  - Being able to build and maintain relationships with parents, peers, and other adults are important developmental tasks.
  - Impolite assertiveness, non-compliance (meaning the child doesn't follow instructions), aggression, and social withdrawal are considered behavior problems or negative social outcomes.
  - If a child is **socially competent**, then he or she behaves and interacts with others appropriately for his or her age.
- **Emotional development and relationships with mothers**—describes a child's emotional growth and skill.
  - Researchers observed whether the children were **securely attached** or **insecurely attached** to their mothers. Securely attached children are able to use the mother as a source of comfort and trust.
  - Observing the type of attachment, the mother's sensitivity to the child, and the child's engagement or connection to the mother helps researchers measure these skills.
  - Researchers also measured mother-child interaction during a toy play session to measure the mother's sensitivity and the level of mother-child engagement.
- **Health and physical growth**—describes the child's physical features and overall physical health.
  - To assess health, researchers used parents' reports of children's overall health and of how often children experienced such common illnesses as fevers, upper respiratory problems, and gastrointestinal (stomach or digestive) upsets.
  - Study researchers measured children's height and weight approximately every year.

For a complete list of the features the Study measured, please see **Appendix B—Child Development Aspects, Family, and Home Features Measured in the NICHD SECCYD**.

Because the Study contains so much data, this booklet can only provide a *summary* of the most consistent findings. If you want more details about one of the findings, we suggest that you locate the reference for that finding in **Appendix E—References**, and then consult the published article. Keep in mind that most of the articles listed are written for scientists and researchers. You can also address specific questions about research findings to the NICHD Study researchers themselves. Their contact information appears in **Appendix D—Guiding the Study**.

An explanation of terms

Causes or Associations?

The Study examined naturally occurring patterns of child care over time. The researchers did not assign children to different kinds of child care, nor did they determine how early in life children would enter child care or for how many hours each week.

As a result, the study cannot reveal whether child care features, such as number of hours in child care, the type of child care, or the quality of child care are the **direct causes** of individual differences among children's health, cognitive, or social outcomes. The Study can describe only **associations** between child care experiences and children's development. In other words, it can explain if child care experiences co-occur with differences in children's outcomes, but it cannot say that "experience A causes outcome B." This summary booklet doesn't use words such as *cause* to describe findings. Instead, it uses such words as **relates**, **associates**, and **predicts** to describe the links between child care or the family and children's development.

What Is the Nature of the NICHD Study Findings?

Only the major scientifically noteworthy findings are presented here. The booklet emphasizes results that are **consistent** or **reliable**; that is, similar associations were found again and again using different ways of examining the data. The degree of associations among features can range from **slight** or **modest** (that is, statistically significant, but minor) to **strong** (that is, statistically significant and fairly major), with **moderate** falling somewhere in between. Most of the relations found in the NICHD Study were slight or moderate. "Slight" or "modest" describe the degree of the findings, not their importance.

Even minor differences between outcomes may be important from different perspectives, especially if they are consistent over time and if they increase or decrease as children develop.

Keep in mind that even minor differences may be important from different perspectives, especially if they are consistent over time and if they increase or decrease as children develop. Similarly, modest effects could be important when applied to large numbers of children because, if many children were slightly more advanced cognitively or slightly more disruptive than they would be without child care, the results could impact how child care settings and schools operate. These settings might be better able to foster additional learning among those who are slightly more advanced cognitively. Likewise, with children who are slightly more disruptive, teachers might need to spend more time managing the class and would have less time to support learning.

What is quality child care?

In examining quality child care, researchers presumed that such care promotes the developmental well-being of children. In the NICHD Study, child care quality was measured in two ways.

First, the researchers examined structural features of child care that are sometimes regulated by public agencies or by states (called "**regulable**" features). These features include adult-to-child ratio, group size, and the training of the child care provider. Regulable features of child care are believed to set the stage for the child's day-to-day experiences in child care.

The second way of measuring child care quality focused on children's actual day-to-day experiences in the child care setting (called "**process**" features). Careful observations provide information about children's social interactions with adults and with other children, as well as their activities with toys and other items.

Consider these types of features in more detail.

Regulable Features[2]

Regulable features used in the Study include the following:

- **Adult-to-child ratio**—How many children is each adult taking care of? In general, the lower the number of children an adult is caring for, the better the observed quality of that care and the better the children's developmental outcomes.
- **Group size**—How many children are in the child's classroom or group? Smaller groups are associated with better observed quality of care.
- **Caregiver's education level**—Did the caregiver complete high school? College? Graduate school? Higher caregiver education predicts higher quality of observed care and better developmental outcomes for children.

Researchers presumed that quality child care promotes the developmental well-being of children.

State and local governments set minimum standards for regulable features like those listed above that child care settings must meet to get licensed. These minimum standards vary greatly across states. You can contact your state or local government to obtain the requirements for licensed child care providers in your area.

More than minimum standards: Accreditation

In addition to the minimum standards set by government for child care quality, professional organizations that specialize in early childhood education and health care set certain higher standards that are useful for parents as they examine a potential child care setting. For instance, the National Association for the Education of Young Children (NAEYC) was one of the first organizations to set standards and to offer certification—called accreditation—to child care centers and family child care homes that meet those standards. Information about these standards is available at the NAEYC Web site (http://www.naeyc.org).

The National Association of Family Child Care, also among the first groups to set minimum standards, also offers certification for family child care homes; visit its Web site for more information (http://www.nafcc.org). Many states also have systems to designate child care settings that meet higher-than-minimum standards of quality. These centers and homes often receive higher rates of repayment for children who receive government aid for child care (called subsidized care).

Pediatricians and health educators also set regulable quality standards for child care centers that are similar to those used by NAEYC. These standards, which the SECCYD researchers used in the NICHD Study, are presented in **Table 2**.

Many children who were in the NICHD Study from infancy to age 3 attended child care centers that did not meet the recommendations for all four standards (see **Table 3**). This finding was particularly true for infant and toddler care. Child care centers attended by older children were more likely to meet the recommended standards.[4]

TABLE 2 Professional Standards for Child Care Recommended by the American Academy of Pediatrics and the American Public Health Association[4]

Adult-to-Child Ratios

- Children age 6 months to 1½ years—3 children to 1 staff person
- Children age 1½ years to 2 year—4 children to 1 staff person
- Children age 2 years to 3 years—7 children to 1 staff person

Group Sizes

- Children age 6 months to 1½ years—maximum of 6 children in the group
- Children age 1½ years to 2 years—maximum of 8 children in the group
- Children age 2 years to 3 years—maximum of 14 children in the group

Training and Education of Staff

- Formal post-high school training, including certification or college degree in child development, early childhood education, or a related field

TABLE 3 Percentage of Child Care Center Classes Observed in the NICHD Study Meeting Recommended Guidelines at Age 6 Months to 3 Years[4,6]

Standard	6 Months	1½ Years	2 Years	3 Years
Adult-to-Child Ratio	36%	20%	26%	56%
Observed Group Size	35%	25%	28%	63%
Caregiver Training	56%	60%	65%	75%
Caregiver Education	65%	69%	77%	80%

How are regulable features important to quality?

Children in child care centers that met accreditation standards had slightly better school readiness and language comprehension outcomes and fewer behavior problems at age 3 than did children in centers that did not meet the standards.[4]

There was no "minimum" number of standards of regulable quality that was sufficient. Each standard was important to better cognitive and social development.

Quite simply, the more standards the child care met, the better children did. This finding held true when researchers controlled for family income and the mother's sensitivity.[4]

Process Features[3,7]

Regulable features of child care offer easy-to-assess indicators of child care quality. Observations of each child care setting provide more detailed information about day-to-day social interactions and activities. Among process features, one of the strongest and most consistent predictors of children's development is **positive caregiving**—that is, sensitive, encouraging, and frequent interactions between the caregiver and the child.

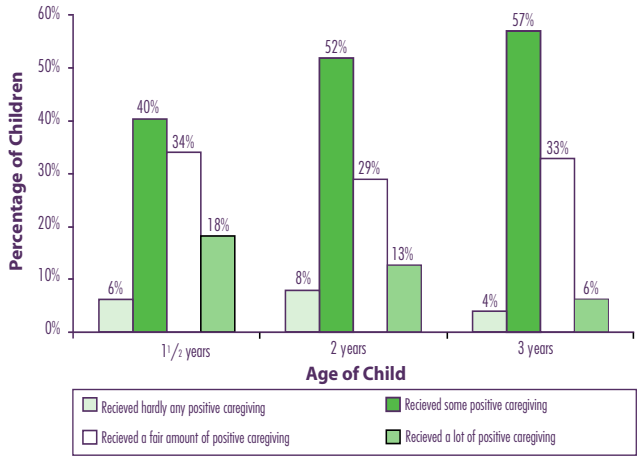
What is positive caregiving?

Positive caregiving is a measure of care quality that is based on direct observations of caregiver behavior. Positive caregiving behaviors include:

- **Showing a positive attitude—**Is the caregiver generally in good spirits and encouraging when interacting with the child? Is he or she helpful? Does the caregiver smile often at the child?
- **Having positive physical contact—**Does the caregiver hug the child, pat the child on the back, or hold the child's hand? Does the caregiver comfort the child?
- **Responding to vocalizations—**Does the caregiver repeat the child's words, comment on what the child says or tries to say, and answer the child's questions?
- **Asking questions—**Does the caregiver encourage the child to talk/communicate by asking questions that the child can answer easily, such as "yes" or "no" questions, or asking about a family member or toy?
- **Talking in other ways—**such as:
  - **Praising or encouraging—**Does the caregiver respond to the child's positive actions with positive words, such as "You did it!" or "Well done!"?
  - **Teaching—**Does the caregiver encourage the child to learn or have the child repeat learning phrases or items, such as saying the alphabet out loud, counting to 10, and naming shapes or objects? For older children, does the caregiver explain what words or names mean?
  - **Telling and singing—**Does the caregiver tell stories, describe objects or events, or sing songs?
- **Encouraging development—**Does the caregiver help the child to stand up and walk? For infants, does the caregiver encourage "tummy time"—activities the child does when placed on his or her stomach while awake—to help neck and shoulder muscles get stronger and to encourage crawling? For older children, does the caregiver help finish puzzles, stack blocks, or zip zippers?
- **Advancing behavior—**Does the caregiver encourage the child to smile, laugh, and play with other children? Does the caregiver support sharing between the child and other children? Does the caregiver give examples of good behaviors?
- **Reading—**Does the caregiver read books and stories to the child? Does the caregiver let the child touch the book and turn the page? For older children, does the caregiver point to pictures and words on the page?
- **Eliminating negative interactions—**Does the caregiver make sure to be positive, not negative, in the interactions with the child? Does the caregiver take a positive approach to interacting with the child, even in times of trouble? Does the caregiver make it a point to interact with the child and not ignore him or her?

Researchers found that the more positive the caregiving, the higher the quality of care.[3] For example, researchers found that the relationship between adult-to-child ratios and children's outcomes could be explained by caregiver behavior—that is, when caregivers cared for a smaller number of children, they showed more positive caregiving, which, in turn, was associated with better outcomes. The same was true for caregiver education level—caregivers with higher education levels engaged in more positive caregiving and, in turn, the children they cared for showed better outcomes. *Positive caregiving, then, was a primary indicator of child care quality.*

Figure 1 Positive Caregiving in the SECCYD



How much positive caregiving do children get?

In the NICHD Study, only a small percentage of children received a lot of positive caregiving[7] (see **Figure 1**). And that percentage decreased as children got older, moving from 18 percent, to 13 percent, to 6 percent during the first 3 years of life. Poor quality care, on the other hand, in which children received hardly any positive caregiving, also occurred for only a small percentage of the children, changing from 6 percent, to 8 percent, to 4 percent during the first 3 years of life.

The percentage of children who received a fair amount of positive caregiving was about 30 percent across the first 3 years of life, which means that these settings provided care that was good, but not outstanding.[7]

By comparing the NICHD Study participants to the overall U.S. population, SECCYD researchers made the estimates about positive caregiving provided to 1½- to 3-year-old children in child care in the United States.[7]

Estimates of positive caregiving included:

- Children in 9 percent of child care settings receive a lot of positive caregiving.
- Children in 30 percent of child care settings receive a fair amount of positive caregiving.
- Children in 53 percent of child care settings receive some positive caregiving.
- Children in 8 percent of child care settings receive hardly any positive caregiving.

In other words, the data suggest that most child care settings in the United States provide care that is "fair" (between "poor" and "good"). Fewer than 10 percent of arrangements were rated as providing very high quality child care. At the other extreme, fewer than 10 percent of child care arrangements were estimated to provide children with very low quality experiences.

How are regulable and process features of child care quality related to each other?

Remember that **regulable features**, the more structural features of care that are sometimes regulated by public agencies or by states, are indirect indicators of quality of the child's experiences in care. **Process features**, measured through careful observation of children in the child care setting, provide more direct information about the child's experiences in care.

In general, the structure of child care, as described in terms of its regulable features, predicts the process features or the children's daily experiences of child care. The process features, then, predict children's behavior and development.

Regulable Features → Process Features → Behavior and Development[8]

The more standards a child care setting meets, the more positive the caregiving. The more positive the caregiving, the higher the quality of care and the better the children's outcomes.

For instance, for young children in care with smaller groups of children cared for by trained caregivers with higher levels of education in a setting with a low adult-to-child ratio, the care provided tends to be warm, attentive, and intellectually stimulating. Children who receive such care are better off developmentally.[7]

In contrast, when groups are large, when there are many children to care for but few caregivers, and the training/education of caregivers is limited, the care provided tends to be of lower quality, and children's development is less advanced. The next section provides a more detailed explanation of the relationship between child care quality and children's outcomes.

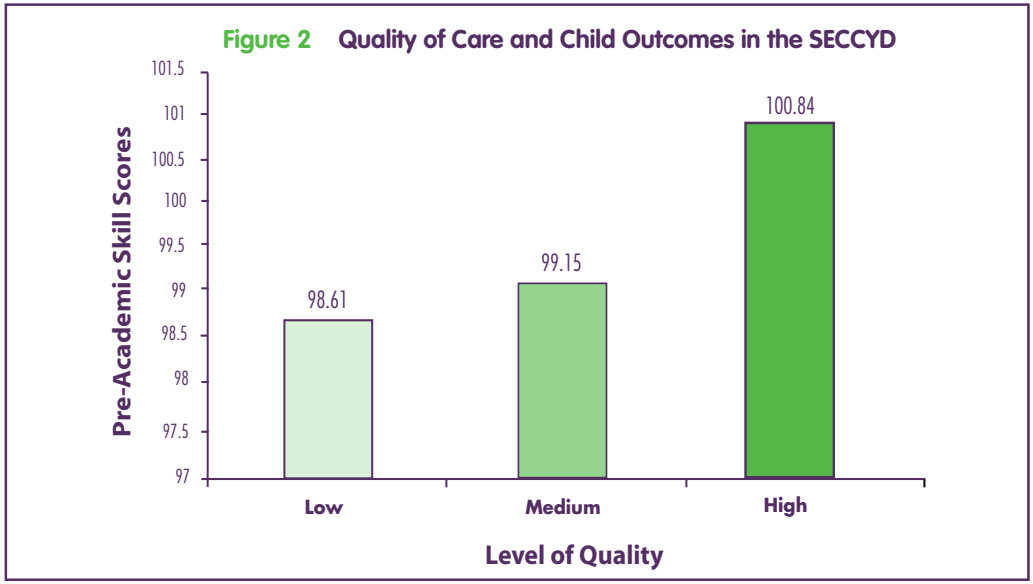
How is quality of child care related to children's development?

Researchers examined process quality (child care quality in terms of process features) and various outcomes, while taking into account children's family features (such as ethnic background and parents' education) and other child care features (such as child care setting). These analyses allowed researchers to identify links between child care quality and child development outcomes.

Child Care Quality and Cognitive and Language Development Outcomes

- Results showed that children who experienced higher quality child care consistently showed somewhat better cognitive function and language development across the first 3 years of life.[2,9]
- The most important feature of quality for predicting cognitive and language development up to age 3 was the language used by the caregiver. More stimulation from the caregiver—asking questions, responding to vocalizations, and other forms of talking—was linked to somewhat better cognitive and language development.[9]
- Higher quality child care also predicted greater school readiness at 4½ years of age, as reflected in standardized tests of literacy and number skills.[10]

Even though child care quality was associated with cognitive and language development, the link was not a strong one. Family and parent features were more important predictors of this development than child care quality.[11] So, the differences between outcomes for children in higher and lower quality care were small relative to the differences associated with family characteristics (the mean score for the pre-academic skills test was 100, with a standard deviation of 15).[10] **Figure 2** provides an illustration of these findings.



Child Care Quality and Social Development Outcomes

- Children who experienced higher quality child care had mothers who were more likely to show slightly higher (rather than slightly lower) levels of sensitivity when interacting with their children at age 6 months, 1½ years, 2 years, and 3 years.[12,13]
- Children who experienced higher quality child care were somewhat more cooperative and compliant and slightly less aggressive and disobedient at 2 years and 3 years of age.[14]
- Children were somewhat more likely to be insecurely attached to their mothers if they were in lower quality care, but only if their mothers were also lower in sensitivity during interactions with their children.[11,12,15]
- Higher quality child care predicted more positive interactions with other children at age 3 years.[16]

The links between child care quality and social outcomes were weak and were more slight than links between family features and the same aspects of social development.[17]

Child Care Quality and Health Outcomes

Child care quality did not predict children's health.[18,19] However, it is important to note that the Study did not address issues related to hygiene. The few measures of hygiene that were included were not statistically significant predictors of health outcomes. It is possible, though, that hygiene was similar in the different settings because of state or local standards.

How can parents and caregivers evaluate the quality of child care?

As you learned earlier, child care quality has many aspects.[8,20,21] The easiest aspects to judge are the regulable standards—adult-to-child ratios, group size, and the child care provider's education and training. You can ask the child care provider whether the setting is accredited and by what organization. Accreditation from one of the organizations mentioned earlier is a good indicator of high quality. Ask whether a child care setting is licensed, listed, or certified by the local government agency responsible for child care regulations. Such a designation means that the setting met minimum standards for quality as defined by the state or local area. You can get this information from your local government.

Evaluating process features of child care quality is more difficult, but the NICHD Study offers a tool that parents can use for this task. The Positive Caregiving Checklist (in **Appendix C—The Positive Caregiving Checklist**) is similar to the one used in the NICHD Study. You can use this checklist to help evaluate the quality of a child care setting you are considering, or at the setting in which your child is already enrolled. Go to **Appendix C** for complete details on the checklist and how to use it.

Can quality of child care help children from families at risk?

Research on the effects of early intervention suggests that children from socioeconomically disadvantaged households benefit a good deal when placed in high quality early education programs.[3] Based on these findings, SECCYD researchers examined whether children who were from low-income families, single-parent homes, or minority ethnic groups benefited more than other children from exposure to high quality child care. They found that, in general, the links between child care quality and child development were similar for children regardless of their family's social and economic resources.[22,23]

But researchers did find that quality of care was especially important for children whose development was slow at age 1½ years. Among these children, high quality care had a greater and more positive impact than was the case for other children.[24] This finding suggests that children's individual features, specifically their developmental status or general level of functioning, were stronger predictors of benefit from high quality care than was socioeconomic or ethnic status.

These findings, however, may have been limited in detecting a true level of benefit because of some of the criteria for participation in the NICHD Study. For instance, the Study did not include mothers younger than 18 years of age, and it did not include a large number of extremely poor children. In addition, before age 4, poor children were less likely than other children to experience very high quality care, so researchers had little opportunity to learn how these children might have benefited. These factors limit the confidence that Study researchers place in the conclusion that the most at-risk children benefit from high-quality care at a similar level as children from more advantaged situations.

What's the bottom line?

The quality of child care is modestly linked to the cognitive development of children across the infant, toddler, and preschool years. Quality is also modestly linked to social development during the infant and toddler years. Children who receive higher quality care show slightly more positive outcomes than do those in lower quality care.

What is quantity of child care?

Quantity of child care is the average amount of time a child spent in child care each week.

On average, children in the NICHD Study spent 27 hours each week in child care between the ages of 6 months and 4½ years.[25]

In addition, older children were more likely to spend more time in care than younger children were. For example, the number of children in care for an average of 30 hours or more per week increased from 37 percent when children were between the ages of 3 months and 1½ years, to 50 percent when they were between 3 and 4½ years old. At the same time, many children who were not in regular care (less than 10 hours a week) as infants increased their time in care by the time they were preschool age. As a result, the percentage of children in care between 10 and 30 hours each week stayed relatively the same over time, as shown in **Figure 3**.

Note the following about the chart:

- Between the ages of 3 months and 1½ years, 27 percent of the children were in child care for at least 10 hours each week, and 37 percent were in child care for more than 30 hours each week.
- Between the ages of 1½ and 3 years, 44 percent of the children were in child care for more than 30 hours each week.
- Between the ages of 3 and 4½ years, 50 percent were in child care for 30 or more hours each week.

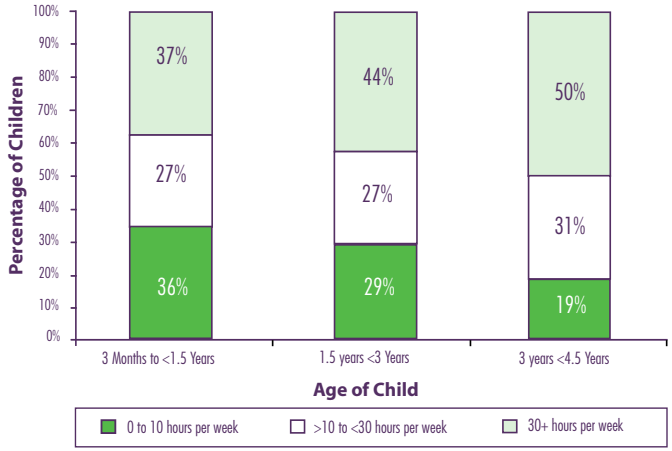
How is quantity of child care related to children's development?

To understand how quantity of child care may influence child development, researchers considered the amount of time a child spent in child care since birth, while taking into account children's family features (such as ethnic background and parents' education) and other child care features (such as child care quality). They examined development of the children at ages 1½, 2, 3, and 4½ years and compared children's development to standards or milestones for those ages. These analyses allowed researchers to identify relationships between child care quantity and some child development outcomes.

Child Care Quantity and Cognitive and Language Development Outcomes

The amount of time spent in child care was not related to children's cognitive or language skills or to their school readiness at any age prior to school entry.[9]

Figure 3 Hours in Care for Children in the SECCYD



Characteristics of Care for Children with Disabilities[35]

Children who have developmental disabilities, such as Down syndrome, Fragile X syndrome, autism, or other disorders, often have special care needs. To learn more about the quality of care these children were getting, two Study researchers conducted an independent investigation to compare measures for a group of children with developmental disabilities with the same measures for children in the NICHD SECCYD.

Among families of children with developmental disabilities, fewer mothers re-entered the work force by the time their child was 1 year old than did mothers in the NICHD Study, whose children did not have disabilities. For this reason, children with disabilities started child care at a later age than the children in the NICHD Study. The data also showed that children with a specific diagnosis of a developmental disorder were in child care for fewer hours than children in the NICHD Study.

Most importantly, children with disabilities received the same quality of care overall as children in the SECCYD.

Child Care Quantity and Social Development Outcomes

- For young children whose mothers showed low levels of sensitivity during mother-child interactions, more than 10 hours of care each week increased the risk of insecure attachment to their mothers.[12,13]
- Children who spent more time in child care were somewhat less cooperative, more disobedient, and more aggressive at age 2 and age 4½, and in kindergarten, but not at age 3.[14,25] These findings were based on reports from caregivers, mothers, and/or teachers about children's behavior.
- Children who averaged 30 hours of child care or more each week during their first 4½ years of life were somewhat more likely to show problem behaviors at age 4 and in kindergarten, based on caregiver reports. But child care quantity did not predict problem behaviors in the home environment as reported by the mothers.[25,27,28]
- Time spent in child care did not predict clinical levels (behaviors that may require special attention) of behavior problems or psychopathology.[27,28]
- Once again, family features were stronger predictors of children's social behavior and development than was quantity of child care.[4,5,27,28]

When children spent more (rather than less) time in child care, their mothers showed lower levels of sensitivity when interacting with them across their first 3 years of life. The same pattern occurred when mother-child interaction was studied at age 4½ years and again in first grade, but only for white children. For African American and Hispanic children, the opposite was true: More (rather than less) time spent in child care across the first 4 years of life predicted higher levels of sensitivity when children were age 4½ and in first grade. In other words, after age 3, linkages between time spent in child care and mothering style were different for white and for African American children.[13]

Child Care Quantity and Health Outcomes

Even though children in child care may be exposed to communicable illnesses (that is, sicknesses you can catch from someone else, such as a cold), the quantity of child care each week had little to do with the likelihood of catching such illnesses, except for two specific situations:

- Children in more hours of child care each week during their first year of life were 8 percent more likely to have an ear infection.[2,18,23]
- Children in more hours of care each week during their first year of life were 4 percent more likely to have stomach illness (such as an upset stomach or brief stomach "flu").[18,19,25]

What's the bottom line?

The amount of time that children spend in child care from infancy through age 4½ is not related to their cognitive outcomes prior to school entry. Children who spend many hours in child care, however, show somewhat more behavior problems and more episodes of minor illness than those in fewer hours of child care. The amount of time a child spent in child care is also associated with mother-child relationships to some degree.

Child Care Type

The number of children in center care, which included part-time preschools, increased from 9 percent at age 6 months, to 31 percent at age 3, to 54 percent at age 4½.

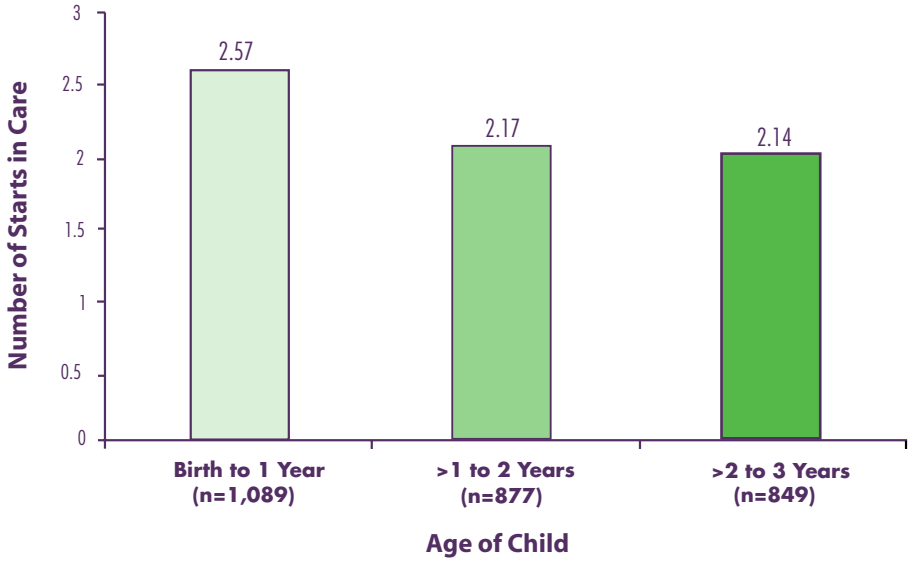
What is child care type?

Children experienced many different types of care throughout the course of the NICHD Study, including:

- **In-home care**—meaning fathers, grandparents, or other adults came to the child's home
- **Child care homes**—meaning adults provided care in their own homes
- **Child care centers**—meaning children received care from adults at a non-home location, such as a traditional day care center

As shown in **Figure 4**, most children in the study experienced more than one child care arrangement (caregiver, setting, type, etc.) in their first year of life (mean of 2.57 arrangements).[25]

Figure 4 Mean Number of Starts in Care for Children in the SECCYD



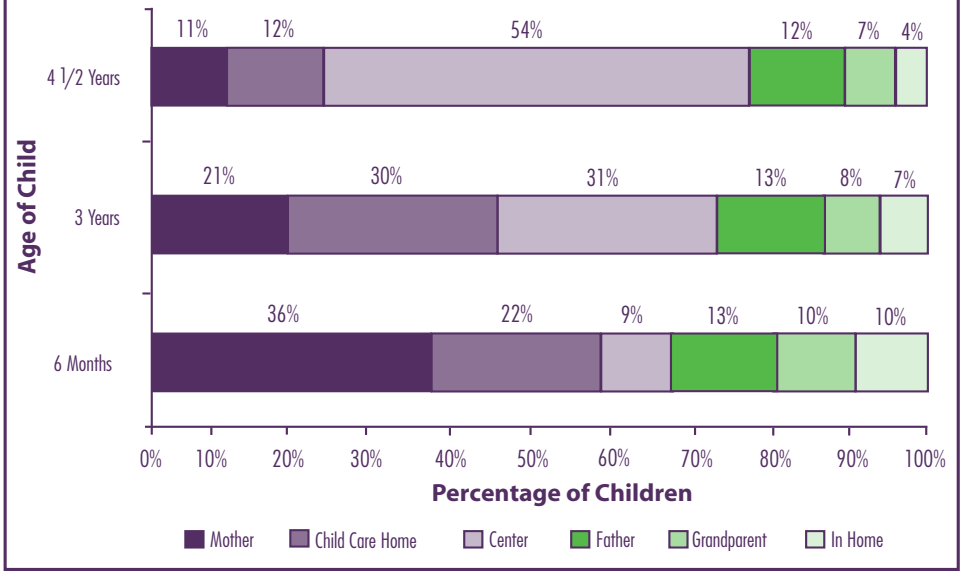
As shown in **Figure 5**, children were increasingly likely to spend time in some kind of child care as they got older. Other trends in child care type include the following:[4,7,25,29]

- The number of children who were only cared for by their mothers shrank from 36 percent (when the children were 6 months of age), to 21 percent (at age 3 years), to 11 percent (at age 4½).
- Grandparent care and in-home care decreased over time from 10 percent, to 8 percent, to 7 percent at age 4½ years.
- In-home care decreased from 10 percent, to 7 percent, to 4 percent at age 4½ years.
- Father care remained stable over time, with about 13 percent of children in this type of care regardless of children's age.
- Enrollment in child care homes was fairly stable for children from birth through age 3 years, with 22 percent enrolled in this type of care at 6 months of age and 20 percent enrolled at age 3. But, these numbers decreased to 12 percent at age 4½.
- The number of children in center care, which included part-time preschools, increased from 9 percent at age 6 months, to 31 percent at age 3, to 54 percent at age 4½.

How is child care type related to children's development?

To understand how type of child care may be linked to child development, researchers considered it in addition to children's family features (such as ethnic background and parents' education) and other child care features (such as quantity of child care). Researchers found that type of child care seemed to have both positive and negative effects.

Figure 5 Child Care Type for Children in the SECCYD



Child Care Type and Cognitive and Language Development Outcomes

Children 6 months of age and older who had more experience in child care centers showed somewhat better cognitive and language development[9] through age 3 and somewhat better pre-academic skills involving letters and numbers at age 4½ than children with less center-based child care experience[7,8,10,29] (when quality was similar).

Child Care Type and Social Development Outcomes

Relations between type of child care and children's social development changed over time. For instance:

- Children who spent more time in group child care, such as child care centers, were somewhat more cooperative with their caregivers at age 2, showed fewer problem behaviors (as reported by the caregiver) at ages 2 and 3, and had somewhat more positive mother-child interactions at age 3 than children in other types of child care.[7,9,29]
- By age 4½, however, children with more center-based child care experience showed somewhat more behavior problems involving disobedience and aggression than children with less center-based care experience as reported by the child care provider.[9,29]

Child Care Type and Health Outcomes[18,19]

Children in child care centers and child care homes were more likely than children who were cared for in their own homes to get ear infections and upper respiratory infections, particularly at ages 1 and 2.

The likelihood of getting stomach illness (such as an upset stomach or brief stomach "flu") was also slightly higher for children in center care than for children in other types of non-maternal care.

Children being cared for by a relative were less likely to get stomach illnesses (such as an upset stomach or brief stomach "flu") during their first year of life, but this likelihood increased slightly during their third year of life.

In addition, the number of other children in the child care setting was related to how often a child got upper respiratory infections and stomach illnesses. For instance:

- Rates of upper respiratory infection, stomach illness, and ear infections were higher in children in child care arrangements that had more than six children.
- Children in large group care were more likely to have an upper respiratory illness than were children who were reared at home or in small group settings.
- Children in large group care were more likely to have an ear infection and a stomach illness (such as an upset stomach or brief stomach "flu") than were children reared at home or in small group settings.
- Experience in large group care during the first 2 years of life did not reduce children's chances of contracting an illness between ages 3 and 4½. However, children who were in large group care during their third year of life were less likely to contract upper respiratory and stomach illnesses between ages 3 and 4½.

What's the bottom line?

Center-based child care is associated with both positive and negative effects. This type of care is linked to better cognitive development through age 4½ and to more positive social behaviors through age 3. But, center-based and large-group settings are also associated with more problem behavior just before and just after school entry. These types of care are also linked to more ear infections and upper respiratory and stomach illnesses during the first 3 years of life.

Features of the family and of children's experiences in their families proved, in general, to be stronger and more consistent predictors of child development than did any aspect of child care.

One major scientific strength of the NICHD Study is its ability to examine linkages between child care and child development, while also examining family features. By examining how family features predicted children's developmental outcomes, while also examining the link between child care features and children's development, it is possible to reduce the likelihood of finding false links between child care and child development. In other words, this process may reduce the possibility of saying that a link exists between child care and child outcomes when actually the outcome is predicted by family features instead.

As noted throughout the booklet, features of the family and of children's experiences in their families proved, in general, to be stronger and more consistent predictors of child development than did any aspect of child care.

What are family features?

In addition to their diverse demographic features (noted earlier in this booklet and described in Appendix A), families in the study had varied home environments, child-rearing/parenting attitudes, psychological adjustment (such as maternal depression), and sensitivity to the emotional and intellectual needs of their children. Researchers used different methods to examine the features of each family. For instance, researchers assessed:

- The **quality of the family environment** through repeated 2-hour visits to the children's homes—During these interviews and observations, researchers learned the extent to which the family provided cognitively stimulating experiences (such as having books in the home, taking trips to the library, and the like) for the child, as well as the emotional tone (positive or negative) of the interactions between the mother and child
- **Parental attitudes** and **maternal psychological adjustment** using written questionnaires
- **Mothers' sensitivity** by observing interactions between mothers and their children in situations that were designed by the Study investigators, involved interesting toys or other play objects, and were the same for all mother-child pairs

For more information on the methods, see **Appendix B**.

How are family features related to children's development?

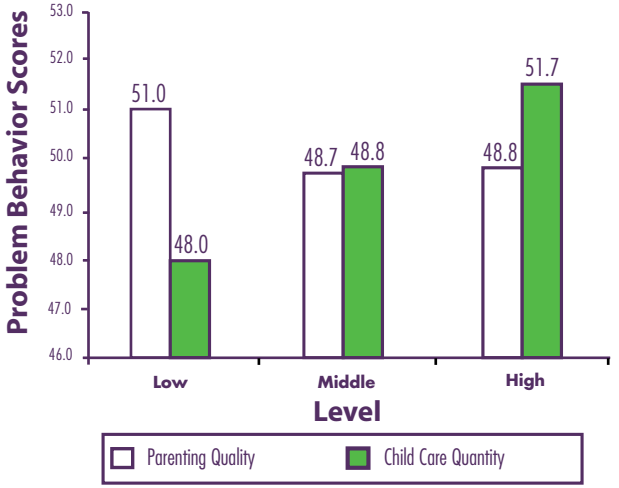
To understand how family features may be involved in children's development, researchers considered these features in the context of certain aspects of child care, such as amount of time in care and quality of care, and while keeping in mind the family demographic features, such as income and ethnicity.

Family Features and Cognitive and Language Development and Social Outcomes

One of the most important and consistent predictors of child cognitive and social development was the quality of the **mother-child interactions**. The more sensitive, responsive, attentive, and cognitively stimulating the mother was during observed interactions, the better the children's outcomes. This result was the same when researchers examined attachment security, language development, pre-academic letter and number skills, and social behavior.[4,9,12–15,30]

In general, mothers who were more educated, lived in more economically advantaged households, experienced fewer symptoms of depression, and had more positive personalities were more likely to provide the type

Figure 6 **Parenting Quality Versus Child Care Features: Problem Behaviors and Pre-Academic Skills**



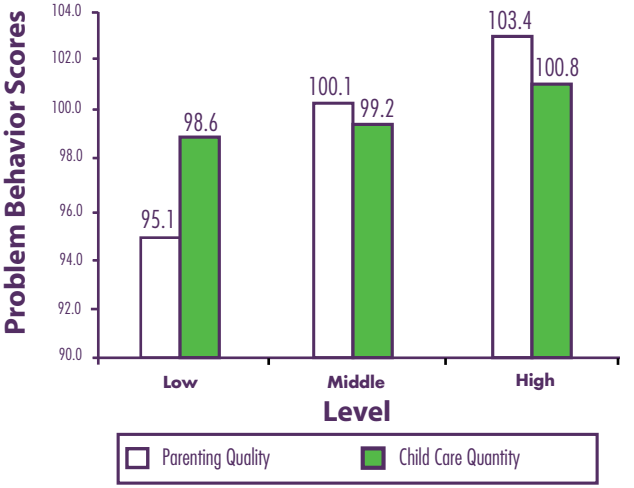
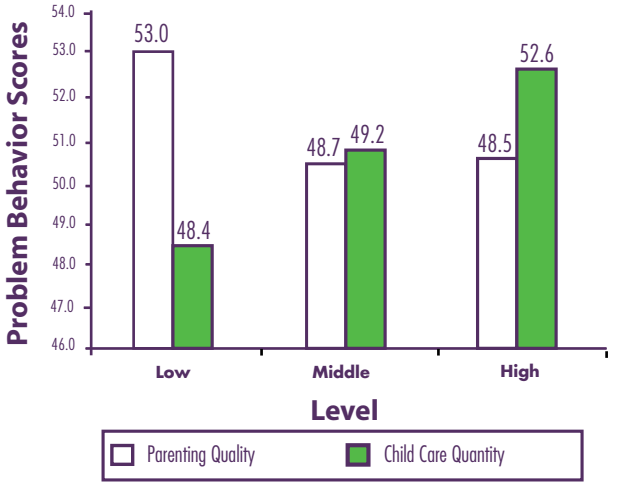
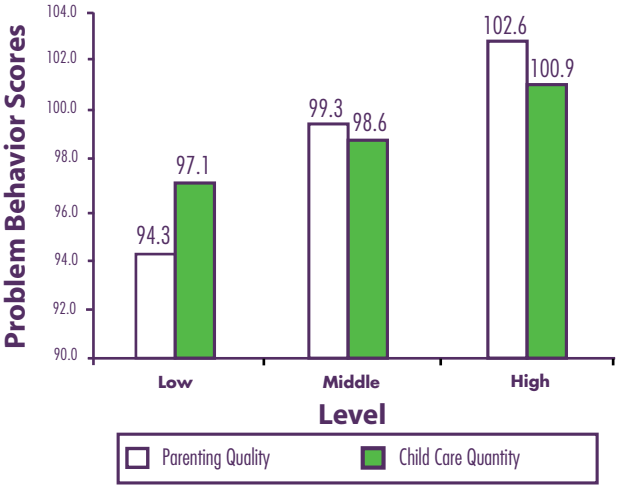


Figure 7 **Family Income Versus Child Care Features: Problem Behaviors and Pre-Academic Skills**





Some of the greater and more consistent predictive power of family features (as opposed to child care features) may result from a combination of biological inheritance (that is, genetic factors) and of children's experiences in the family environment. However, the NICHD Study was not designed to make such fine distinctions.

of mother-child interactions that was linked to better developmental outcomes for the Study children.

Many of these predictors of positive mother-child interactions were also independently related to child well-being—meaning that children had better outcomes when these features were present, regardless of the mother-child interaction. So, children did better overall if their parents were more educated, when they lived in more economically advantaged families, and when their mothers experienced fewer or no symptoms of depression and had more positive personalities.

Another very important and consistent predictor of children's cognitive and social development was the quality of the family environment. Families who had well organized routines, those with books and play materials, and those who took part in enhancing experiences both inside and outside the home (such as going to the library or attending a cultural festival) had children who were more advanced socially and cognitively.[5,6,12,23]

The relation between family features and children's outcomes was similar for children in extensive child care (30 or more hours each week) and for children in extensive maternal care.[31] For instance:

- Children in exclusive maternal care during the first 3 years of their life performed similarly to children in child care on cognitive outcomes, but performed slightly differently on language outcomes.
- Most children in exclusive maternal care at just older than 1 year and at 2 and 3 years of age had cognitive, language, and achievement scores similar to those of children in child care.[9]
- Recent findings related to cognition, language, and social development at ages 2 years, 3 years, and 4½ years showed almost no evidence suggesting that child outcomes were related to whether or not the child experienced routine child care.[32]

Other Findings About Family Features

Family features predicted all the developmental outcomes that child care predicted, but also predicted outcomes not predicted by child care.

Even though the overall association between family features and child development was moderate, the association was two to three times stronger than the links between child care features and development. **Figure 6** and **Figure 7** compare the strength of these links for two specific family features—parenting quality and family income—and for two specific outcomes—problem behaviors and pre-academic skills.

What's the bottom line?

Many family features are more strongly and more consistently linked to child development outcomes than are child care features for children up to age 4½ (and even into kindergarten). The following characteristics predicted children's cognitive/language and social development: parents' education, family income, and two-parent family compared to single-parent family; mothers' psychological adjustment and sensitivity; and the social and cognitive quality of home environment.

The SECCYD provides valuable and much-needed data on family, schools, and children's growth and development, particularly as children move from child care into early school, and from early school to middle school and high school. In 2005, the children in the SECCYD (born throughout 1991) all celebrated their 14th birthday, and the majority was in 8th grade. At this time, the NICHD is committed to following the development of the children through 9th grade.

As the children continued in school, researchers continued to collect data to help answer basic questions, such as whether there were lasting associations among family features, child care, and children's development in the middle childhood years, in early adolescence, and in mid-adolescence. For instance, Study researchers have already completed analyses about how features of kindergarten and elementary schools are related to child outcomes, and to what degree cognitive enrichment provided by the mother and by school are associated with the child's school success.

Some of the other topics of analyses include:

- Child development outcomes related to before- and after-school care arrangements[33]
- Quantity of child care and children's socio-emotional adjustment during the school years[27]
- Quality of child care and children's academic and social development during the school years[34]
- Type of child care and children's academic and social development during the school years[34]

Over the last 10 years, the NICHD Study has explained a great deal about the lives of many American families and children. As the Study continues through the children's middle adolescence, its results will continue to provide an important resource for decisions about child care, school, and after-school programs; about families and home environments; and about the contribution of all these qualities to individual differences in children's intellectual, social, and emotional development.

Over the last 10 years, the NICHD Study has explained a great deal about the lives of many American families and children.

National Institute of Child Health and Human Development (NICHD)

For more information on child development, including parenting, the links among child care, school, and development, and children's growth, contact the NICHD. The Institute supports and conducts research on topics related to the health of children, adults, families, and populations, including child care and how child care influences children's growth and development.

The mission of the NICHD is to ensure that every person is born healthy and wanted, that women suffer no harmful effects from the reproductive process, and that all children have the chance to fulfill their potential for a healthy and productive life, free of disease or disability, and to ensure the health, well-being, independence, and productivity of all people through optimal rehabilitation.

The Institute supports and conducts research on topics related to the health of children, adults, families, and populations, including child care and how child care influences children's growth and development.

You can contact the NICHD at:

NICHD Information Resource Center

Phone: 1-800-370-2943
TTY: 1-888-320-6942
Fax: (301) 984-1473
E-mail: NICHDInformationResourceCenter@mail.nih.gov
Mail: P.O. Box 3006, Rockville, MD 20847
Internet: http://www.nichd.nih.gov

NICHD Study of Early Child Care and Youth Development (SECCYD)

For more information about the SECCYD, visit the Study Web site at http://secc.rti.org. Geared more toward scientists and researchers, this site provides:

- A complete description of the instruments used to collect NICHD SECCYD data
- An approximate timeline of the data collections
- General information about the Study
- Instructions for accessing the public use datasets
- Contact information for investigators involved in the Study
- A complete list of peer-reviewed journal articles related to the NICHD SECCYD or the NICHD SECCYD datasets
- A complete list of publications related to the Study

Scientists and researchers may also contact the NICHD Project Scientist/Scientific Coordinator of the SECCYD: **Sarah L. Friedman, Ph.D.,** at 301-435-6946, or via e-mail at friedmas@mail.nih.gov. The NICHD also maintains a Web site for the Study (http://www.nichd.nih.gov/od/secc/index.htm), although it is not the primary Web site for the NICHD Study.

In addition, a compilation of articles about and resulting from the SECCYD was published in April 2005. *Child Care and Child Development—Results from the NICHD Study of Early Child Care and Youth Development* (457 pages; ISBN 1-59385-138-3; edited by the NICHD Early Child Care Research Network) is available for purchase at http://www.guilford.com/

Administration for Children and Families (ACF)

For more information on child care programs and support, contact the ACF. The ACF, within the U.S. Department of Health and Human Services, is responsible for federal programs that promote the economic and social well-being of families, children, individuals, and communities.

Within the ACF, the **Child Care Bureau** is dedicated to enhancing the quality, affordability, and availability of child care for all families. As part of its mission, the Child Care Bureau administers federal funds to states, territories, and tribes to assist low-income families in accessing quality child care for children when the parents work or participate in education or training. You can contact the ACF at:

ACF Child Care Bureau

Phone: (202) 690-6782
Fax: (202) 690-5600
Mail: Switzer Building, Room 2046, 330 C Street, SW, Washington DC 20447
Internet: http://www.acf.hhs.gov/programs/ccb/index.htm

Appendix A

about the Families and the sites involved in the NICHD SECCYD

The families are representative of those who gave birth in 1991 at one of the 24 hospitals selected for the Study.

The NICHD Study Families[5]

The SECCYD began in 1991 with 1,364 children and their families from across the United States. Researchers selected the families from geographically diverse locations throughout the country, and the participants differed in many ways, from their income, to their ethnicity, to their family structure. These differences allowed researchers to investigate the relationships among different features of child care and the development of children whose families had different backgrounds.

In the total study population in 1991, 56 percent of families were living-above-poverty; 23 percent were living-near-poverty; and 21 percent were living-in-poverty. For those families who used child care between 3 and 15 months, 55 percent were living-above-poverty; 24 percent were living-near-poverty; and 21 percent were living-in-poverty in 1991 and the beginning of 1992.* (See **Table A-1**.)

In 1991, some of the features of the families involved in the Study included the following:

- The average household income of the families in the Study ($37,947) was only slightly higher than the U.S. average ($36,875).
- Families who took part in the Study were more likely to receive public assistance (18.8 percent) than a family in the U.S. average (7.5 percent).
- Of the families enrolled, 76.4 percent were white (of non-Hispanic origin), 12.7 percent were African American, 6.1 percent were Hispanic, and 4.8 percent were Asian, Pacific Islander, American Indian, or other.
- Mothers of families who took part in the Study had a wider variety of education levels than the U.S. average; 35.3 percent had a bachelor's degree or higher, 33.4 percent had some college, and 31.3 percent had a high school degree or lower.

Demographic Characteristics of the SECCYD Participant Families

The families involved in the SECCYD are **not nationally representative overall** because the researchers did not draw the sample from the nation as a whole. Instead, the families are representative of those who gave birth in 1991 at one of the 24 hospitals selected for the Study.

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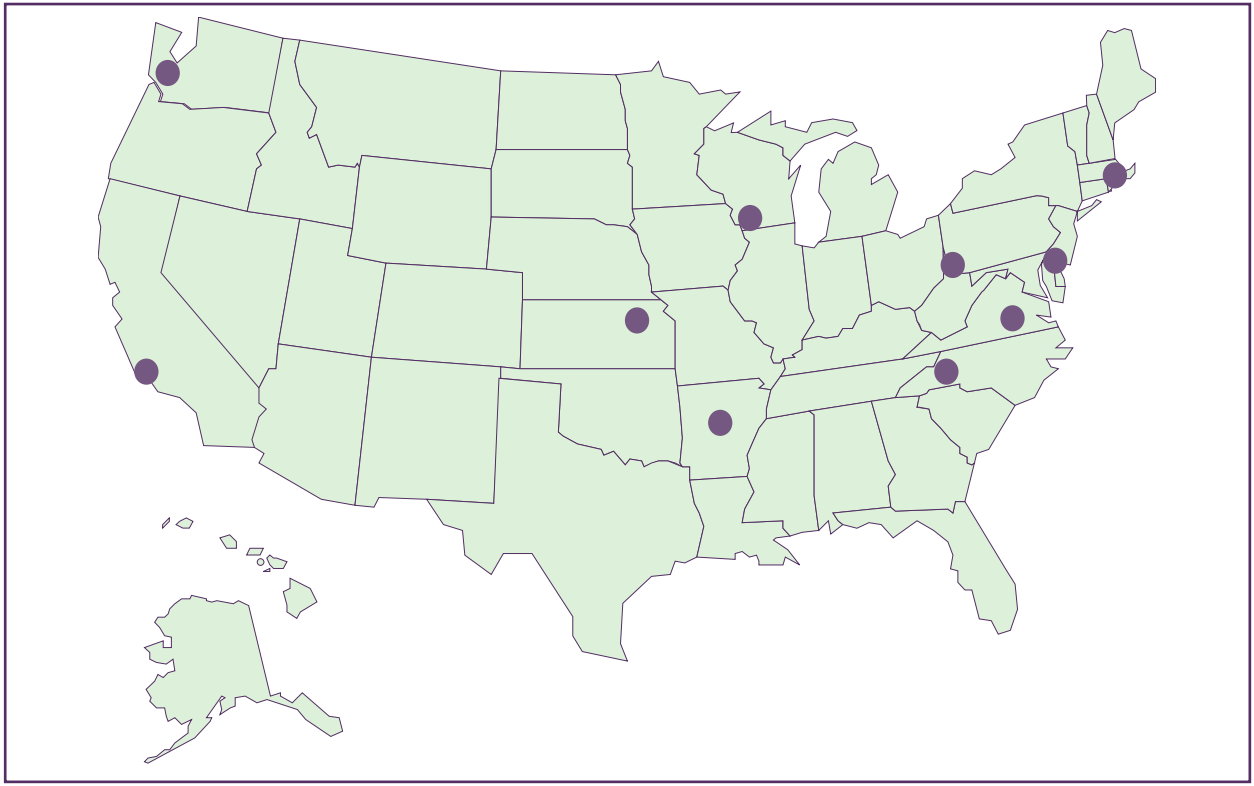
* For the NICHD Study, "poverty" was defined using an **income-to-means ratio**, which is calculated by taking the total family income (not including federal or state aid) and dividing it by the federal poverty threshold, a number determined every year by the U.S. Department of Commerce. When the SECCYD started in 1991, the federal poverty threshold for a family of four was $13,924. So, families living-in-poverty had a total income of less than that amount, which would mean their income-to-means ratio was 1.0 or lower. Those families living-near-poverty had an income-to-means ratio between 1.0 and 1.99. Those living-above-poverty had a ratio of 2.0 or higher.[1,5,6,11]

TABLE A-1 Demographic Characteristics of the SECCYD Participant Families

	Age 1 Month	Age 3 Years	Age 4½ Years
Total Number of Families	1,364	1,216	1,084
Income-to-Needs Ratio	(Based on 1,273 Families)	(Based on 1,208 Families)	(Based on 1,073 Families)
0 to 1 (Poverty)	21.5%	14.4%	11.8%
1.1 to 1.9 (Near Poverty)	22.9%	19.5%	19.0%
Greater than 1.9 (Non-poor)	55.6%	66.1%	69.2%
Maternal Education	(Based on 1,363 Families)	(Based on 1,216 Families)	(Based on 1,084 Families)
No High School Degree	10.2%	9.2%	8.5%
High School Degree/GED	21.1%	20.3%	20.1%
Some College	33.4%	33.1%	33.9%
College Degree	20.8%	22.1%	22.9%
Post-Graduate Education	14.5%	15.2%	15.5%
Ethnicity (of child)	(Based on 1,364 Families)	(Based on 1,216 Families)	(Based on 1,084 Families)
White, non-Hispanic	76.4%	78.1%	78.8%
Black, non-Hispanic	12.7%	11.4%	11.2%
Hispanic	6.1%	5.8%	5.6%
Other	4.8%	4.7%	4.4%
Gender (of child)	(Based on 1,364 Families)	(Based on 1,216 Families)	(Based on 1,084 Families)
Male	51.7%	51.4%	50.5%
Female	48.3%	48.6%	49.5%
Two-Parent Family	(Based on 1,364 Families)	(Based on 1,216 Families)	(Based on 1,084 Families)
Yes	85.5%	83.1%	83.4%
No	14.5%	16.9%	16.6%

Figure A-1 **SECCYD Sites**

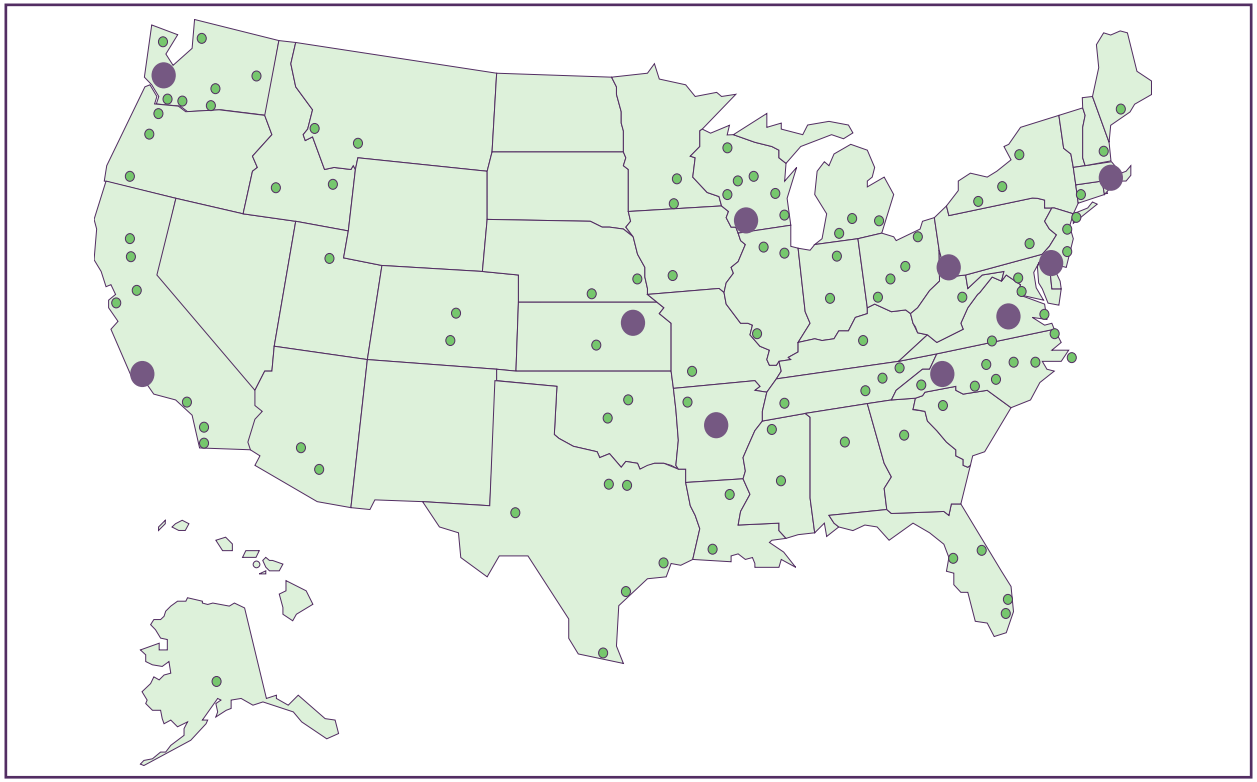


The NICHD Study Sites

Researchers in the SECCYD collect data on families at 10 sites around the country (see **Figure A-1**). These sites are affiliated with the following universities:

- University of Arkansas at Little Rock
- Harvard University and Wellesley College
- University of California, Irvine
- University of Kansas
- University of North Carolina, Chapel Hill
- Temple University
- University of Pittsburgh
- University of Virginia
- University of Washington, Seattle
- University of Wisconsin, Madison

Figure A-2 Locations of Participating Families



Families that participated in the SECCYD live all across the United States, although when they were recruited into the Study, the families lived near one of the 10 data collection sites. **Figure A-2** shows the geographic locations of the SECCYD families. The purple dots are data collection sites, and the green dots indicate the locations of participating families.

After collecting data for more than 10 years, the SECCYD datasets contain hundreds of thousands of pieces of information. To manage these data, the SECCYD relies on its Data Coordinating Center, located at Research Triangle Institute (RTI) International, Inc., in North Carolina.

In addition, the SECCYD depends on scientific guidance and oversight from the NICHD, which has supported the Study since it started in 1991. The SECCYD Scientific Coordinator is a researcher at the NICHD, located at the NIH in Bethesda, Maryland.

Appendix B

Child, Family, and Home Features Measured in the NICHD SECCYD

The measurements were taken in a number of places: at the child care location, in the home, in the laboratory at the Study sites, and by phone and mail.

NICHD SECCYD researchers noted many features of the families who took part in the Study, including: the features of the individual child, the features of the child's home environment, and the features of the child care situation(s) the child was placed in. The measurements were taken in a number of places: at the child care location, in the home, in the laboratory at the Study sites, and by phone and mail. To get reliable measurements that could be compared, SECCYD researchers used different tests and scales that are standard within the research community. These features and their descriptions appear below. For the tests, surveys, or observational procedures used to measure these features, go to http://secc.rti.org/.

Features of the Individual Child

- **Behavior**—The child's responses to his or her environment as reported by those who know the child, or as observed or tested in playroom laboratory visits
- **Development**—The physical, social, emotional, and intellectual progress of the child in relation to what is typical at a given age
- **Relationships**—Quality of a child's interactions with people in his or her environment, including attachment to the mother and interactions with other children
- **Temperament**—A child's usual mood or personality

Home/Family Features

- **Home environment**—The details of the child's home, including socioeconomic status and income
- **Mother and father features**—The traits of the parents, guardians, or others, including physical health, mental health, and parenting attitudes—attitudes toward work, family, and child care

Child Care Features

- **Regulable features**—Structural features, including child care type, child-to-adult ratio, caregiver education, and specialized education
- **Process features**—Observed features, including level of positive caregiving and quality

Appendix C

The Positive Caregiving Checklist

Many features make for quality child care. Some of these features include child-to-caregiver ratio, group size, and the language a caregiver uses with a child. Among predictors of child care quality, one of the strongest and most consistent predictor of children's development is the extent and the degree to which caregivers provided **positive caregiving**. NICHD SECCYD researchers looked at all the different caregiver behaviors that make up positive caregiving and found that these behaviors were linked to features of quality care that can be regulated, such as child-to-caregiver ratio.

Before using the Positive Caregiving Checklist, parents and families should find out as much as they can about the child care setting, including whether or not it meets the recommendations for child-to-caregiver ratio, size of group, and caregiver training and education. These recommendations are issued by the various professional societies that focus on child care (see **Table 2** on page 9 for more details). They may also want to visit the child care setting and watch how the child care providers interact with other children under their care before making a decision about their child's care.

Using checklist (see **Table C-2**) similar to the measurements used by NICHD SECCYD researchers, parents and families can focus on their children's experiences in the child care setting (either the one they are considering or the one their child is currently in).

To use this checklist when visiting your child's child care location:

1. Talk to your child's caregiver to let him or her know that you will be stopping by sometime during the week to watch your child in the child care setting. If your child is not yet in the child care setting you wish to observe, contact the child care provider and ask if you can visit the child care setting; then select one child to watch during your visit.
2. Sit off to the side of the setting and let the child and the caregiver go through their day as they normally do. Don't interrupt the play or change the situation in any way, if possible.
3. Use a watch or timer to keep track of a set amount of time for watching your child and the caregiver together. Try an hour, or maybe 30 minutes.
4. Mark the sheet each time the caregiver does one of the actions on the list.
5. When time is up, go back through your record sheet and add ratings for each behavior the caregiver completed. Use the ratings provided on the next page.
6. Add up how often the caregiver did each of the items on the list, and then get an overall total.

If the caregiver does many of the items on the checklist, or does them often, then the caregiver is probably providing a more positive caregiving environment, which suggests that your child is getting higher quality child care. This type of environment encourages the child to grow and learn and can help him or her build important skills.

If you counted the caregiver doing each action only once in a 30-minute period, or if you rate the caregiver as doing one or more behaviors hardly any of the time, you may want to talk to the caregiver about including positive interactions with your child more often.

Note: The Positive Caregiving Checklist is not meant to be the only measure of quality care, nor is it intended to take the place of other guidelines or standards for quality care.

TABLE C-2 The Positive Caregiving Checklist

Date: **Set Amount of Time:** (For example, 30 minutes)

How Often Does the Caregiver...	How Often?	Rating: 1 = Hardly any of the time 2 = Some of the time 3 = A fair amount of the time 4 = A lot of the time	Total
Show a positive attitude—Is the caregiver generally happy and encouraging in manner? Is he or she helpful and upbeat? Does the caregiver smile often at the child?	_____	_____	_____
Have positive physical contact—Does the caregiver hug the child, pat the child on the back, or hold the child's hand? Does the caregiver comfort the child?	_____	_____	_____
Respond to Vocalizations—Does the caregiver repeat the child's words, comment on what the child says or tries to say, or answer the child's questions?	_____	_____	_____
Ask Questions—Does the caregiver encourage the child to talk by asking questions that the child can answer easily, such as "yes" or "no" questions, or asking about a family member or toy?	_____	_____	_____
Talk in other ways			
[**Praising or encouraging**—Does the caregiver respond to the child's positive actions with positive words, such as "You did it!" or "Well done!"?	_____	_____	_____
[**Teaching**—Does the caregiver encourage the child to learn or have the child repeat learning phrases, such as saying the alphabet out loud, counting to 10, naming shapes or objects? For older children, does the caregiver explain what words or names mean?	_____	_____	_____
[**Telling and singing**—Does the caregiver tell stories, describe objects, or sing songs?	_____	_____	_____
Encourage development—Does the caregiver help the child to stand up and walk? Does the caregiver encourage tummy time activities with the child? For older children, does the caregiver help finish puzzles, stack blocks, or zip zippers?	_____	_____	_____
Advance behavior—Does the caregiver encourage the child to smile, laugh, and play with other children? Does the caregiver support sharing between the child and other children? Does the caregiver give examples of good behaviors?	_____	_____	_____
Read—Does the caregiver read books and stories to the child? Does the caregiver let the child touch the book and turn the page? For older children, does the caregiver point to pictures and words on the page?	_____	_____	_____
Eliminate negative interactions—Does the caregiver make sure to be positive, not negative, in the interactions with the child?	_____	_____	_____
		Overall Total:	

For more information, contact the **NICHD Information Resource Center** at:

Phone: 1-800-370-2943 (TTY: 1-888-320-6942)

Mail: P.O. Box 3006, Rockville, MD 20847

Fax: (301) 984-1473

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Internet: http://www.nichd.nih.gov

Appendix D Guiding the Study

Initiating and Maintaining the Study

The NICHD Study of Early Child Care and Youth Development originated with a decision of the NICHD Director, Duane Alexander, M.D. In 1987, it came to his attention that the scientific knowledge about child care and its effects on the development of young children was confusing and left parents wondering if it was safe to place infants and toddlers in child care. If it was safe, mothers and fathers needed to know at what age children could be left with other caregivers, and for how many hours. Also parents wondered if there might be developmental benefits from child care and how they could determine the quality of child care.

To respond to the public need for evidence-based information, the NICHD and the scientific community embarked on designing a large, comprehensive, and in-depth study of child care and the development of children. The NICHD provided resources and other conditions to facilitate collaboration among the investigators, and to make it possible to carry out this landmark study.

Although the original study was to track the development of the study children for the first 3 years of life, the NICHD invited the researchers to continue the Study through first grade, and then through fifth grade. Most recently, it invited the investigators once again to continue the Study through middle adolescence. In addition, the NICHD has asked the Study researchers to make their datasets available to other researchers in the scientific community, so that more questions about child care and child development could be posed and answered for the benefit of children, their families, and society.

Major scientific decisions about the Study are reviewed and approved by the **SECCYD Steering Committee**, which includes a chairperson, the principal investigators (PIs) from the 10 data collection sites, the PI from the Data Coordinating Center, and the Project Scientist/ Scientific Coordinator from the NICHD. The committee chairperson is an independent developmental psychologist, who provides impartial oversight of Study activities. When arriving at its decisions, the Steering Committee takes into consideration input from the co-PIs in the Study, who together with the Steering Committee members comprise the **NICHD Early Child Care Research Network**. The Network is listed as the author of many of the journal articles listed in **Appendix E**. An Advisory Board of leading scholars in the field of child development and health provides additional impartial oversight.

The members of the NICHD Early Child Care Research Network (as of 2004) are listed alphabetically.

To respond to the public need for evidence-based information, the NICHD and the scientific community embarked on designing a large, comprehensive, and in-depth study of child care and the development of children.

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An *ad hoc* Advisory Board also reviews research plans for the Study, including the development of the study design. Members of the Board include:

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- Deborah L. Coates, City University of New York
- Andrew Collins, University of Minnesota
- Henry N. Ricciuti, Cornell University
- Bruce Shapiro, Kennedy-Krieger Institute

Appendix E References

This list of references includes only selected articles and publications about the NICHD Study findings included in this booklet. It is not a complete listing of articles and publications related to the Study. For a complete list of peer-reviewed journal articles and publications related to the SECCYD or the SECCYD datasets, visit the SECCYD Web site (http://secc.rti.org).

In addition, a compilation of articles about and resulting from the SECCYD was published in April 2005. *Child Care and Child Development—Results from the NICHD Study of Early Child Care and Youth Development* (457 pages; ISBN 1-59385-138-3; edited by the NICHD Early Child Care Research Network) is available for purchase at http://www.guilford.com/

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