
Appendix A

METHODOLOGY

The study was conducted in four urban communities in Indiana, in Marion, Lake, Allen, and St. Joseph counties. These communities were chosen because they were abundantly populated and contained varying availability of licensed and unlicensed child care.

Research assistants visited public places, schools, and government agency offices to locate low-income parents of young children. Volunteer participants were recruited through the following sites:

- workforce development services;
- Women, Infants, and Children programs (WIC);
- Ivy Tech State Colleges, Indiana University-Purdue University Indianapolis (IUPUI), Indiana University-Purdue University Fort Wayne;
- breast feeding classes;
- GED classes;
- Baby Closet;
- housing authorities;
- Child Care and Development Fund (CCDF) voucher offices;
- community centers; and
- public libraries.

Several enrollment criteria were established to ensure that our sample represented low-income working families with young children in out-of-home care. The criteria included:

- annual family income was less than \$35,000;
- head of the household was “working” (work, school, or job training) at least 20 hours a week;
- family had a child between 6 months to 6 years old and the child was in out-of-home care at least 15 hours per week for more than two months;
- family was not receiving TANF (Temporary Assistance for Needy Families); and
- child care provider agreed to participate.

Eligible families were encouraged to complete a sign-up sheet and ask their children’s caregiver if he/she would participate in the study. A total of 475 families completed the sign-up sheet during initial enrollment. Next, research assistants made a follow-up

phone call to confirm whether both the family and their caregiver agreed to participate. If so, research assistants scheduled a visit with the caregiver to observe the child in the child care setting for about two and one-half hours. Among the 475 potential participating families, 307 families and their child care providers participated, a participation rate of 64.6%. Families dropped out from the study for a variety of reasons, including lost contact during the follow-up phone call, the caregiver did not consent to participate, or the family was no longer eligible when contacted.

During the child care visit, the caregiver was asked to read and sign a consent form before the research team conducted any observation or assessment. After receiving signed consent, the research team observed and assessed the global, process, and structural quality of the child care setting.

The global quality of each child care setting was assessed via direct observation by a research assistant utilizing the Early Childhood Environment Rating Scale—Revised (ECERS-R, Harms, Clifford, & Cryer, 1998) in center-based child care settings and the Family Day Care Rating Scale (FDCRS, Harms & Clifford, 1989) in home-based child care settings. Aspects of structural quality (child-adult ratio, group size, and caregiver education, training, and experience) were assessed via direct observation and caregiver survey. The Arnett Caregiver Interaction Scale (CIS, Arnett, 1989) and context coding of each child’s activity, caregiver-child involvement (modified from Howes & Stewart, 1987), child’s level of social interaction, and child’s cognitive level of object play was used to assess process indicators of quality. After establishing rapport with the child, the research team conducted standardized assessments: Mullen Scales of Early Learning (Mullen, 1995) was used if the child was under 36 months old; the Peabody Picture Vocabulary Test—Third Edition (PPVT-III, Dunn & Dunn, 1997) and FACES tasks were used if the child was over 36 months old.

After the observation was completed, the research assistant left a caregiver survey and a parent survey with the caregiver. Parents picked up and returned the survey to the caregiver. The parent survey was designed to measure parent employment patterns, parents’ perceptions of child care and work, parents’ relation-



ship with the caregiver, and their child’s social and emotional development. The caregiver survey was designed to gain information about the caregivers’ specialized training and experience in child care work, their relationship with the child and the parents, and each child’s social and emotional development. Both packets were collected by a research assistant and a \$30 check was given to each parent and caregiver after the completed survey was received.

COMMUNITY CHILD CARE LEADER INTERVIEWS

Semi-structured telephone interviews were completed with a purposive sample of 22 community child care leaders—key

informants—from Marion, Lake, Allen, and St. Joseph counties, including five or six in each county. Key informants were identified as individuals who had knowledge and expertise in child care or the needs of low-income working families. Informants included representatives of Purdue Extension, a county official from the Division of Families and Children, members of the local Step Ahead coordinating council, business human resource specialists, representatives of WIC offices, representatives of the Child Care Resource and Referral Agencies, and a professor of psychology at a local university who works closely with early education and care programs. The key informant interviews addressed child care issues from three perspectives: the family, the child care providers, and the larger community.

TABLE 1.2. SUMMARY OF CRITICAL CHILD CARE ISSUES FROM INTERVIEWS AND FOCUS GROUP

Constructs	Instruments
Community context	Community child care leader (key informants) interviews Parent focus groups Existing state and county data
Parent and child characteristics	Parent survey
Caregiver characteristics	Caregiver survey
Global child care quality	Early Childhood Environmental Rating Scale—Revised (ECERS-R) or Family Day Care Rating Scale
Structural child care quality	Observation: group size & child-adult ratio Caregiver survey: Caregiver qualifications (education, training, years of experience)
Process child care quality	Caregiver Interaction Scale (CIS) Observation: caregiver involvement with child
Social-emotional competence and behavioral problems (Infants & Toddlers)	Brief Infant Toddler Social and Emotional Assessment (BITSEA) parent and caregiver report
Cognitive functioning (Infants & Toddlers)	Mullen Scales of Early Learning
Social and cognitive skills (Preschool Age Children)	Classroom Behavior Inventory (CBI) parent and caregiver report
Social competence, emotion regulation and expression, and adjustment difficulties (Preschool Age Children)	Social Competence and Behavior Evaluation (SCBE-30) parent and caregiver report
Receptive vocabulary (Preschool Age Children)	Peabody Picture Vocabulary Test (PPVT-III)
Knowledge of social environment (Preschool Age Children)	Family And Child Experiences Survey (FACES): Social Awareness Task
Knowledge of colors and counting ability (Preschool Age Children)	Family And Child Experiences Survey (FACES): Color Name & Counting

Interview Questions About Low Income Families:

1. What is the current and projected demand for child care services in this community for low-income families?
2. What are the strengths and weaknesses in child care resources in this county?
(How are families finding, paying and maintaining child care?)
3. What types of child care services are needed but are not available in your county?
(For example: sick child care, second shift, resource and referral.)
4. What types of child care do the low-income families use now? (Regulated or unregulated.)
5. What types of child care do most of these families prefer?
6. Are the available subsidies to low-income working families sufficient?
7. Are the available resources being fully utilized? (For example: funding, slots, R&R.)

Interview Questions About Child Care Providers:

1. What resources are available to county child care providers to help them offer good quality care for all families? (For example: money, training, mentors, accreditation, resource library.)
2. Are the available subsidies and other resources adequate, or are there unmet provider needs?
3. What is your sense of the quality of care available in this county?

Interview Questions About the Community:

1. Is this community unique in its child care services? How?
2. What are your recommendations for meeting this community's child care needs in the next five years?
3. What are the best ways for us to contact low-income working families in this community and enlist their participation in the study?
4. Are you aware of employers who might be or are interested in working with us?
5. What is the best way to contact the employers of these families in your community?

PARENT FOCUS GROUP INTERVIEWS

Two parent focus groups were conducted in each community. A total of 46 parents participated in the focus group interviews in

St. Joseph, Marion, Allen, and Lake counties (n = 9, 9, 8, 20, respectively). Focus groups took place in public libraries, job training centers, and child care centers, and were comprised primarily of clients of local child care centers, GED classes, family service agencies, or work training programs. The focus group interviews proved to be valuable sources of information, as these volunteer parents were eager to share their ideas, concerns, and suggestions with the researchers.

Focus Group Interview Questions:

1. What child care arrangements do you have for your children now while you are working, in school, or in job training?
2. When you need to find child care outside of your immediate family, who do you go to? Who do you ask first for help or information?
3. How much do you rely on relatives or friends for help with child care? What kinds of help?
4. How flexible are your current child care arrangements? In other words, what happens when you need to change your hours, take some time off, or when you need more hours of care?
5. Have you experienced problems finding or using child care of any type? What kinds of problems? How do these child care problems affect you and your family?
6. Do you have the financial resources you need to purchase the child care you want for your child? What kinds of resources are available to help you pay for care? Are you able to use these resources?
7. In a perfect world, what would your ideal child care solution be?
8. Do you have ideas about how your community could better support families with child care? What would help you, and who would do it?

PARENT SURVEY

Parents completed a paper and pencil survey that asked about child and family demographic characteristics, parent employment/education outcomes, and parent perceptions of work and child care. These data not only were used for sample descriptive purposes but also to examine the relations of demographics with child care quality, child development outcomes, and parent employment/education outcomes. Descriptions of parent employment/education patterns will be provided as a separate section later.

Child and Family Demographic Characteristics

Questions about number of children and adults in the household; child's age, sex, and race; reason for using out-of-home child care; child's child care history (age of entry and ending in each child care setting); and child's relations with adults living in the household were asked. Information regarding male and female heads and their employment status, occupation, highest level of formal education, marital status, family income, and type of housing were also collected.

Parent Perceptions of Work and Child Care

Work Flexibility Scale. This scale was adapted from Bond, Galinsky, and Swanberg (1998). Male and female heads of each household were asked to rate six items of work flexibility with respect to their child care issues (e.g., "My shift and work schedule cause extra stress for me and my child.") using a 5-point rating scale format (1 = strongly disagree, 3 = neutral, to 5 = strongly agree). A mean score for the scale was calculated to indicate the levels of work flexibility for male and female heads of household. The internal consistencies were minimally acceptable (Cronbach Alpha = .50 for male head and .64 for female head).

Child Care Flexibility Scale. This scale consists of seven items derived from Emlen (1998). Parents were asked to rate statements about their child's child care setting and caregivers (e.g., "My caregiver is willing to work with me about my work schedule.") using a 5-point rating scale format (1 = strongly disagree, 3 = neutral, to 5 = strongly agree). A mean score was calculated to indicate the level of flexibility the child care setting and caregiver provided parents. The internal consistency for this scale was minimally acceptable (Cronbach Alpha = .56).

Child Care Availability. Parents were asked about the number of days they spent looking for child care and to rate levels of difficulty in finding satisfactory child care on a 5-point Likert scale (1 = very easy to 5 = very difficult). In addition, parents also reported their perceptions of child care availability by rating six items adapted from Emlen (1998) (e.g., "There are good choices for child care where I live.") using a 5-point rating scale format (1 = strongly disagree, 3 = neutral, to 5 = strongly agree). A mean score was calculated for analysis. The internal consistency for this scale was acceptable (Cronbach Alpha = .75).

Child care quality scale. Parents rated the quality of their current child care setting on six items (e.g., "caregiver warmth toward

your child"), ranging from 1 (perfect) to 6 (poor). A mean score was calculated for analysis. The scale was found to have a high internal consistency (Cronbach Alpha = .92).

CAREGIVER SURVEY

Caregivers completed a paper and pencil survey that asked about their demographic characteristics and information regarding their child care work. These data were used not only for sample descriptive purposes but also to examine the relation of demographics with child care quality, child development outcomes, and parent employment outcomes.

Demographic Characteristics

This part of the caregiver survey consisted of questions regarding caregiver's age, marital status, race, and family income.

Information on Child Care Work

This portion of the caregiver survey included questions about their annual earnings from child care, fringe benefits from their child care work, the reasons that they work in child care, their plan for child care work (i.e., "How much longer do you plan to work in child care?"), the number of years during which they have been working in child care, possible reasons for leaving child care work, and whether or not they have a substitute caregiver.

CHILD CARE QUALITY

Global Quality

Center-based child care settings, including licensed child care centers/preschools, child care ministries, and Head Start settings were assessed using the Early Childhood Environment Rating Scale-Revised (ECERS-R). Quality of home-based child care settings such as family child care homes (licensed/unlicensed) and relative cares were assessed using the Family Day Care Rating Scale (FDCRS). The two measures, designed to carry similar conceptual structures, allow researchers to compare quality across types of child care settings.

In our study, observers spent at least two hours in the classroom or day care home rating the ECERS-R or FDCRS. Total and subscale scores for analysis were calculated by dividing total scores by the number of items. Four observers were trained to a minimum 80% reliability (calculated as agreements/agreements + disagreements) on the ECERS-R and FDCRS before beginning data collection. The average inter-rater percent agreement was

88% (range = 53 ~ 100%), and the average Cohen's Kappa was .82 (range = .41 ~ 1.00).

Early Childhood Environment Rating Scale—Revised edition (ECERS-R: Harms, Clifford, & Cryer, 1998). The ECERS-R was used to assess global quality in center-based child care settings. It consists of 43 items that address space and furnishings, personal care routines, language-reasoning, activities, interaction, program structure, and parents and staff. Each item was rated on a 7-point scale (1 = inadequate; 3 = minimal; 5 = good; 7 = excellent). The total scale was shown to be reliable ($r = .921$; Harms, Clifford, & Cryer, 1998).

In the present study, the subscale internal consistencies ranged from .81 to .93. The total scale internal consistency was .97, calculated without item 37 (provisions for children with disabilities) because too few cases were scored. The total mean score of all items was used for analysis.

Family Day Care Rating Scale (FDCRS: Harms & Clifford, 1989). The FDCRS was used to assess global quality in home-based child care settings. It consists of 32 items organized under six subscales: space and furnishings, basic care, language and reasoning, learning activities, social development, and adult needs. Each item is rated on a 7-point scale (1 = inadequate; 3 = minimal; 5 = good; 7 = excellent). The authors reported adequate inter-rater reliability ($r = .86$) and significant positive relationships with independent home visitor quality ratings.

In the present study, the subscale internal consistencies range from .70 to .89, with a total scale internal consistency of .95. The total mean score was used for analysis.

Structural Quality

Group Size and Child-Adult Ratio. The number of adults and children in each child care setting was recorded six to eight times by a researcher during a two-hour visit to each child care setting. Group size was defined as the maximum number of children present in the child care setting, and child-adult ratio was calculated by dividing the maximum number of children by the maximum number of adults in the classroom or in the home.

Characteristics of Caregiver. Caregivers were asked to report their general education level, specialized training level (i.e., number of training programs they have completed), and their

child care experiences (i.e., number of years in child care work) in the caregiver survey.

PROCESS QUALITY

Student Teacher Relationship Scale (STRS: Pianta, 1992). The STRS is a paper and pencil measure caregivers completed. It was used to assess the caregiver's perceptions of his/her relationship with a particular child, the child's interactive behavior, and how the caregiver thinks the child feels about him/her. This measure blends theory on child-adult attachment with research on the importance of early school experiences in determining the trajectories of children's school progress. The STRS is a 5-point Likert-type scale (1 = Definitely does not apply, 5 = Definitely applies) consisting of 28 items that can be divided into three subscales: Conflict (12 items), Closeness (11 items), and Dependency (4 items). Previous studies conducted to test validity of this measure found a correlation between STRS scores and behavioral problems in elementary classrooms, peer relations, and the cost and quality of the child care environment. In addition, among children who were likely to be referred for special education, high scores on the STRS were predictive of success in the early school years, indicating the sensitivity of the instrument to resilience processes. The authors report internal consistencies (Cronbach's Alpha) of .91 for the total score, .93 for the Conflict subscale, .86 for the Closeness subscale, and .68 for the Dependency subscale (Pianta, 1992). For the present study, the internal consistencies (Cronbach's alpha) were .81 for Conflict, .71 for Closeness, .58 for Dependency, and .78 for the total scale. The total mean score was used for analysis.

Parent Caregiver Relationship Scale (PCRS: Elicker, Noppe, Noppe, & Fortner-Wood, 1997). The PCRS is a paper and pencil measure that parents and caregivers completed to assess the perceived quality of the dyadic parent-nonparental caregiver relationship. The 35 items on the scale assessed the parent or a caregiver's perceptions, attitudes, and feelings about her/his relationship with the other partner in the caregiving dyad. Each item consists of a statement about the relationship, scored by circling the appropriate number on a 5-point Likert-type scale (1 = Strongly disagree to 5 = Strongly agree). There are three factor-based subscales for each version of the PCRS. For the parent version of PCRS, the subscales are Trust/Confidence, Collaboration, and Affiliation. The caregiver PCRS has the same first two subscales and a Caring subscale instead of Affiliation. Validity correlations were computed between PCRS variables and theoretically-related variables in the child-care context, such as

group size and amount of time in care. Parent subscales correlations (Pearson's r) ranged from $-.22$ to $.37$; caregiver subscales ranged from $.25$ to $.48$. There were no significant correlations found between parent or caregiver PCRS scores ($r = .03$ to $.19$) and the child care variables examined. Our sample internal consistencies (Cronbach's alpha) for the parent version were $.95$ for the total score, $.93$ for the Trust/Confidence subscale, $.89$ for the Collaboration subscale, and $.66$ for Affiliation. For the caregiver PCRS, our sample internal consistencies were $.89$ for total score, $.91$ for Trust/Confidence, $.55$ for Collaboration, and $.61$ for the Caring subscale. A total mean score for parent report and a total mean score for caregiver report was used for the analysis.

Caregiver Interaction Scale (CIS: Arnett, 1989). The CIS was used to measure the quality of care and interactions provided by caregivers in child care settings. Research assistants rated dimensions of caregiver interactions using a 4-point scale [Not at all (1) to Very much (4)] during the child care setting observation. The CIS consists of 4 subscales: Positive interactions (10 items), Punitiveness (eight items), Detachment (four items), and Permissiveness (four items). The internal consistencies (Cronbach Alpha's) for this sample were: $.94$ for the Positive interactions scale, $.92$ for the Punitiveness scale, $.89$ for the Detachment scale, and $.06$ for the Permissiveness scale. We did not use the Permissiveness subscale due to the low internal consistency. The internal consistency for the total score without the Permissiveness scale was $.94$. A total mean score consisting of the Positive Interactions, and reversed scores for Punitive and Detachment subscales was used for analysis.

Adult Involvement Scale. Using time-sampling techniques (20-second intervals) research assistants coded the behaviors of caregivers to reflect the level of responsive interactions (modified from Howes & Stewart, 1987). The average inter-rater percent agreement was 89% (range = 55 to 100%), and the average Cohen's Kappa was $.83$ (range = $.38$ to 1.00). The following are code descriptions.

- **Ignore** – Adult within three feet of child but paying no attention to focal child.
- **Routine/minimal** – Caregiver touches the child for routine caregiving (e.g., blowing nose) but no verbal response to child; caregiver touches child only for necessary discipline, to move child away from another, to answer a direct request for help, or to give verbal directives with no reply encouraged.

- **Simple/elaborate/intense** – Caregiver uses warm or helpful contact beyond essential routine care or answers the child's verbal bids without elaboration; caregiver engages in some physical gestures, maintains close proximity to the child, acknowledges a child's statements and responds to but does not restate, or sits with the child during play, suggests materials, etc. Caregiver hugs or holds child, restates child's statement (thus acknowledges it) and provides answers to the child, engages the child in conversation, plays interactively with the child, or sits and eats with the child in a social atmosphere.

“Adult responsive interaction” was calculated as the proportion of simple/elaborated/intense adult involvement out of the total time when an adult was within three feet of the focal child. In other words, it is the percent of time during which an adult was interacting responsively to the focal child when the adult was within three feet from the child.

Children's activity. Using time-sampling techniques (20-second intervals) research assistants coded the behaviors of each child to reflect the type of activity in which he/she was engaged (modified from Howes & Stewart, 1987). The average inter-rater percent agreement was 96% (range = 85 to 100%), and the average Cohen's Kappa was $.95$ (range = $.78$ to 1.00). The following are code descriptions.

- **Art** – Children are painting at an easel or working on a project that involves some combination of paper, glue, paint, colored pencils, scissors, etc. Focus is on producing a product that is adult-determined (e.g., matching bunny rabbits) or child determined (open-ended). Putting on a smock to do an art activity is included. If the product is child-determined, put an 'O' in the box instead of a check.
- **Books/library/writing** – Child is “reading” books, even if it is not in the library area of the room (pretend reading is included), with peer/adult/self. Also code this if the child is in a designated writing center (in a classroom) or any other location where writing materials are provided for children to use in anyway they desire (don't count writing that is part of dramatic play).
- **Blocks** – Child is building with large blocks on the floor; using large constructive play materials (e.g., pipes).
- **Computer** – Child is playing computer games, using word processing to create documents, or surfing the Web. May be operating the mouse and keyboard or be a companion to child who is.



- **Dramatic play** – Child is in area of room/house designated for fantasy play (e.g., housekeeping or other theme area) or using dress-ups, housekeeping items, dolls, etc. Child does not have to be actually engaged in fantasy for this to be coded. They must be using materials designated for fantasy play, however.
- **Manipulatives/table toys** – Child is playing with tinker toys, bristle blocks, puzzles, peg boards, lotto, play dough, etc. (even if on the floor).
- **Music** – Child is using musical instruments, CD player/tape/record player for listening, singing, dancing, etc. (Do not code if music is in the background and child sings along while they are engaged in something else.)
- **Sand/water/sensory** – Child is using sand table, water table, or table with textured materials (such as beans, goop, rice, pudding, shaving cream).
- **Large motor** – Child is involved with a climber, running, balance beam, etc.
- **Television** – Child is watching the TV or a video/DVD and not engaged in any of the other activities listed. Not coded when the TV is in the background. If the show is child-oriented (e.g., children’s cartoons, Sesame Street, Bear in the Big Blue House, etc.), put a ‘C’ in the box instead of a check.
- **Didactic** – Child is working with flash cards, worksheets (not coloring book; see art), reciting the alphabet or numbers. Could also include doing the calendar, weather, day of the week, or recognizing names with cards.
- **Routines** – Child is engaged in hand-washing, toileting, eating snack (code TV if eating snack in front of TV). If this is coded, then PLAY is not coded.
- **Other** – Child is in an undefined area (e.g., potted plant area) or in an activity not listed here.
- **Wandering/unoccupied** – Child is wandering among activities without being engaged in any of them, or is otherwise

unoccupied. Sitting on an adult’s lap for comfort is considered unoccupied.

Children’s activity categories were combined as: none, low-yield, medium-yield, and high-yield activities, based on concepts developed in previous studies (Howes & Smith, 1995; Kontos et al., 2002; Kontos & Wilcox-Herzog, 1997), and the proportions of each category to the total number of intervals observed were calculated. Table A.2. provides a description of each combined child’s activity category.

We also created one index variable indicating the level of children’s activity based on the four categories presented above. A weighted score for each category was calculated using the proportion values observed. Then the weighted scores for the four categories were summed, and we used the summed score as the level of each child’s cognitive activity. Possible scores range from 0 (None) to 3 (high-yield activity).

Adult talk. Using time-sampling techniques (20-second intervals) research assistants coded the caregiver’s talk to reflect the type of verbalizations that they used. Whether the caregiver’s talk was initiated or in response to the child was coded; then type of talk was coded. The following are code descriptions.

Adult Initiates/Responds (check one):

- **Initiates** – Adult initiates verbal interaction with the child.
- **Responds** – Adult responds verbally to child’s verbal or nonverbal initiation.

Type of Adult Talk (check one):

- **Praise/acknowledgement** – Teacher uses verbal praise with child (good job, excellent, that is a pretty picture, etc.) or acknowledges a child (okay, thank you, etc.).

TABLE A.2. DEFINITIONS OF CHILDREN’S COGNITIVE ACTIVITY CATEGORIES.

Cognitive Activity Level	Activities Engaged	Score Given
None	Routines, Other, and Unoccupied/wandering	0
Low-yield	Close-ended art, Didactic, TV (TV and TV-child), and Large motor.	1
Medium-yield activities	Manipulatives, Book/Writing, Sensory, Computer, and Music	2
High-yield activities	Open-ended art, Blocks, and Dramatic play	3

- **Social** – teacher talks to child about personal and home topics such as clothing being worn, what children or caregiver did outside of class, talking about siblings/parents, etc. (regardless of form the language takes).
- **Question** – The question is designated to elicit a verbal response from the child (yes/no or open-ended response). Code even if the intent is not realized. Verbal clue of correct response is not provided.
- **Expansion** – Teacher listens to what child says and restates with more complex language.
- **Describes** – Teacher describes what the child is doing or what child could be doing. Code if teacher is reading a book verbatim or describing pictures in a book.
- **Prompt/suggestion** – Child is given a verbal clue as to what he/she should do by giving only part of the information. Sort of a reminder. Not the same as a directive, because it does not tell the child exactly what to do. Examples include: How about trying this? Maybe this is a way to do it. It might help to _____. Why not put that block here? Is there another way? There might be another way to do it. A good choice would be to _____.
- **Directive** – Teacher makes a statement that tells child exactly what he/she should do with no reply encouraged. Examples: Tell Jim how you feel. Sit in that chair. Go to the front door. You need to stop.

Adult talk was further categorized as high level talk and low level talk. High level talk included question, expansion, prompt/suggestion, and describes; low level talk included praise/acknowledgement and directives. In our analyses, we only used adult high level talk as a process quality variable.

For the Adult Initiates/Responds section, the average inter-rater percent agreement was 96% (range = 90 to 100%), and the average Cohen's Kappa was .92 (range = .73 to 1.00). For the Types of Adult Talk section, the average percent agreement was 95% (range = 80 to 100%), and the average Cohen's Kappa was .90 (range = .67 to 1.00).

PARENT OUTCOMES

In the parent survey, families were asked to report on male and female heads of household employment patterns. The type of their work, whether or not a recent raise or promotion was received, work shift (daytime, evening, night, or shift change), length of time in current position, and if they work full-time (35

or more hours/week), part-time (less than 30 hours/week), or temporary position was determined for each male and female head household identified. Families were also asked to report the total number of hours per week each head of household was involved in work or school/training, and the amount of time lost from work in the last month due to illness, child illness, or child care problems.

CHILD OUTCOMES

Child Behaviors

For both infants/toddlers and preschool-age children, behaviors of children and caregivers were coded in 20-second intervals to reflect 'types of child's play,' 'people/objects with whom/which the child interacting/attending to,' and 'whom the child talks to.' The following are the code descriptions.

Play. Behaviors of each child were coded in 20-second intervals to reflect the type of play. The average inter-rater percent agreement was 91% (range = 60 to 100%), and the average Cohen's Kappa was .82 (range = .45 to 1.00). The following are code descriptions.

- **Unoccupied/wandering** – Check if checked in "activity" and/or "interacting/attending to" (15 seconds or more). Check if child is in Time-Out.
- **Onlooker** – Child is stopped and engaged in observing what other child/children is/are doing (15 second or more); watch adult prepare materials without talking to peers/adults.
- **Engaged with peers** – Child is focused on peer interaction (conversation, running/chasing) more than toys or fantasy.
- **Engaged with adults** – Child is focused on adult interaction more than toys or fantasy. Code if child is sitting on an adult's lap for comfort.
- **Engaged in manipulating/exploring** – mouths, takes apart, holds and caresses, otherwise focuses on toys without using them for play (the way they were intended or for fantasy); looking at pet.
- **Engaged in using toy in way intended** – Lotto is used as lotto rather than build little houses out of the lotto cards; holding pet.
- **Engaged in fantasy** – Any type of play that primarily involves fantasy (transforming objects or transforming people).

If an “engaged” category is tied with an “unoccupied/wandering” or “onlooker,” use the engaged category. Do not code if child is in Routine activity.

Child’s social interaction. Behaviors of each child were coded in 20-second intervals to reflect child’s social interactions. The average inter-rater percent agreement was 96% (range = 85 to 100%), and the average Cohen’s Kappa was .88 (range = .63 to 1.00). The following are code descriptions.

- **Peers** – Child’s primary focus is on interacting with peers – not involving fantasy – rather than primarily interacting with materials or engaging in fantasy play with peers. Must have eye contact or reciprocal behavior with peers.
- **Adults** – Child is focused on interactions with an adult who is reading, talking, playing with the child. Eye contact and/or reciprocal behavior is assumed. Only code if child is not engaged with play materials. Code if child is sitting on adult’s lap for comfort even if no verbal interaction is occurring.
- **Play materials** – Child is primarily focused on the play materials (blocks, table toys, art) rather than peers or adults. Child may be involved in fantasy play with or without props.
- **TV/video/computer** – Child is primarily engaged in interactions with these machines rather than peers, teacher, toys, or fantasy.
- **No one (wandering/unoccupied)** – Check this if wandering/unoccupied checked in area of room (unless child is sitting on adult’s lap for comfort). Put ‘A’ instead of check if child is alone in the room.

Child talk. Behaviors of each child were coded in 20-second intervals to reflect to whom the child talked. The average inter-rater percent agreement was 95.79% (range = 85 ~ 100%), and the average Cohen’s Kappa was .93 (range = .74 ~ 1.00). The following are code descriptions.

- **No one** – Coded if child speaks to no person during the entire observation interval.
- **If child speaks** (verbalizes – no sounds or gestures) even one time, then code into one of following:
- **Self, computer, unknown** – Child is talking to self rather than peers or teacher, talks to computer while working on it, talks to a stuffed animal, or talks but the observer cannot determine the exact audience.
- **Other children** – Child is talking to other children.
- **Adult** – Child is talking to an adult.

INFANTS AND TODDLERS (6 ~ 35 MOS.)

Brief Infant Toddler Social and Emotional Assessment (BITSEA: Briggs-Gowan & Carter, 2002)

The BITSEA was used to measure infants’ and toddlers’ social-emotional competence and behavioral problems. Both the parent and the caregiver responded to BITSEA items based on behaviors observed at home or in child care. This is a short version of ITSEA (Infant Toddler Social and Emotional Assessment). The BITSEA consists of 60 items selected from ITSEA, and each item is scaled 0: Not true/Rarely, 1: Somewhat true/Sometimes, and 2: Very true/Often. This measure contains two subscales, one of which measures problem behaviors (49 items) and the other measures competence (11 items). Internal consistency of the scales from the original data was .66 to .89 (Briggs-Gowan, Carter, Skuban, & Horwitz, 2001). Validity was measured by comparing parents’ report with evaluators’ ratings, and most correlations were significant ($r = .39$ to $.44$). As an additional measure of validity, they investigated whether or not “parental worry, parenting stress, and interference in family life (p. 26)” are significantly related to high scores on problem scale and low scores on competence scales to measure another kind of validity, and they found significant relationships among them ($r = .25$ to $.63$). The internal consistencies for our sample were .74 for competence scale and .84 for the problem scale. Internal consistency of parents’ report was .77, and that of caregivers’ report was .83. Two composite variables (one parent and one caregiver report) were created to combine Social Competence and Problem Behavior into a total measure of socio-emotional competence for analysis.

The Mullen Scales of Early Learning (Mullen, 1995)

The Mullen Scales of Early Learning was used to assess infants/toddlers cognitive ability. At the child care setting, research assistants administered the Mullen to participating infants and toddlers. It consists of four scales: Visual Reception Scale, Fine Motor Scale, Receptive Language Scale, and Expressive Language Scale. Using these four scales it is possible to compute an “Early Learning Composite” score, and this was the score used in this analysis. The Visual Reception Scale examines a child’s performance in processing visual patterns. The Fine Motor Scale examines a child’s visual-motor ability. The Receptive Language Scale examines a child’s ability to process linguistic input. The Expressive Language Scale examines a child’s ability to use language productively. Internal consistency was tested using modi-

fied split-half procedure for each scale and for the composite. The median values of the internal consistency for each scale were from .75 to .83 and that of the composite was .91. In addition, test-retest reliability was checked by administering the scales to two samples (50 1- to 24-month-old children and 47 25- to 56-month-old children). Test-retest reliabilities for the younger group were from .82 to .85; those for the older group were from .71 to .79.

To check construct validity, developmental progression of scores, intercorrelations of the scales, and principal-axis factor analysis were examined. Steady increases were found in mean scores through the age range confirming age differentiation in developmental progressions (younger children develop more rapidly). Mullen also examined the squared values of correlations and found that some variance in each scale was explained by other scales. This indicates “an underlying commonality of the separate scale scores to yield a meaningful composite (p. 60).” Principal-axis factor analysis was conducted as well, and it was found that all four scales provide estimate of general cognitive development with factor loading higher than .65, and that receptive language and expressive language measure gave the best estimate of general cognitive development.

In addition, the author examined correlations between Mullen Scales and other measures, such as Bayley Scales of Infant Development (Bayley, 1993) and found higher correlations between Mullen Scales and Bayley Mental Development Index (ranging from .53 to .59) than between Mullen Scales and Bayley Psychomotor Development Index (ranging from .21 to .52), suggesting that Mullen Scales is a valid measure of cognitive development. Mullen also included some literature supporting that Mullen Scale is a valid cognitive measures (e.g., Bangs, 1986; Brigrance, 1978;).

OLDER CHILDREN (3-5 YEARS)

Classroom Behavior Inventory (CBI: Schaefer, Edgerton, & Aaronson, 1977)

The Classroom Behavior Inventory (CBI) was used to measure preschool-age children’s social and cognitive skills. The CBI is a paper and pencil adult report measure containing 30 items that are rated on a 5-point scale ranging from Not at all (1) to Very much (5). The original measure consists of 10 subscales: Considerateness (5 items), Creativity (5 items), Extroversion (5 items), Independent (5 items), Task-orientation (5 items),

Verbal intelligence (5 items), Dependence (3 items), Hostility (3 items), Introversion (3 items), and Distractibility (3 items). Internal consistencies were from .85 to .96 for individual scales. Osborne, Schulte, and McKinney (1991) conducted factor analysis in their study and created three composite subscales: Academic Competence factor (Creativity, Verbal intelligence, Independence, Task orientation, reversed Dependence, and reversed Distractibility), Extroversion factor (Extroversion and reversed Introversion), and Considerateness factor (reversed Hostility and Considerateness). This analysis creating three composite factors explained 82% of the total variance of the original framework for the CBI conducted by Schaefer et al. (1978). The internal consistencies for our sample were .90 for the Academic competence scale, .72 for Extroversion scale, and .79 for the Considerateness scale. Internal consistency of parents’ report was .89, and that of caregivers’ report was .94.

Social Competence and Behavior Evaluation (SCBE: LaFreniere & Dumas, 1996)

The short form of SCBE consists of three scales: Anger-Aggression (10 items), Social Competence (10 items), and Anxiety-Withdrawal (10 items). These scales were used to assess socio-emotional competence. Parents and caregivers rated items ranging from not at all like the child (1) to very much like the child (2). The original 80-item Social Competence and Behavior Evaluation (SCBE) was developed to measure 30- to 78-month-old children’s “patterns of social competence, emotion regulation and expression, and adjustment difficulties (p.369).” Anger-Aggression scale contains items regarding angry, aggressive, egotistical, and oppositional behaviors; Social Competence scale consists of items related to joyful, secure, tolerant, socially integrated, calm, pro-social, cooperative, and autonomous behaviors; and Anxiety-Withdrawal scale includes items related to depressed, anxious, isolated, and dependent behaviors. Sixty-seven percent of the total variance was explained by these three factors. The authors collected data in three different sites: Quebec, Indiana, and Maine. Internal consistencies were from .72 to .89. Validity was tested by computing correlations of these three indexes with the corresponding 10-item scales, and the correlations were from .92 to .97. In addition, in the Indiana sample the authors asked teachers to rate children using another measure related to children’s problem behaviors (the Revised Behavior Problem Checklist: RBPC) and computed correlations with Anger-Aggression and Anxiety-Withdrawal scales. The Pearson’s correlations were .67 and .87. The internal consistencies for our sample were .84 for the Anger-Aggression scale, .83

for Social Competence scale, and .74 for the Anxiety-Withdrawal scale. Internal consistency of parents' report was .83, and that of caregivers' report was .88.

For data analysis, the CBI and SCBE were combined to create two socio-emotional competence composite scores, one reported by parents and one reported by caregivers. High scores imply that the child's behavior was rated low on anger-aggression and anxiety-withdrawal and high on social competence; and low scores imply that the child's behavior was rated high anger-aggression and anxiety-withdrawal and low on social competence. For our analyses, the standardized scores were used ($M = 0$, $SD = 1$). If the score is positive, the child is more socially competent than aggressive and anxious/withdrawn. If the score is negative, the child is more aggressive and anxious/withdrawn than socially competent. If the score is close to 0, it means there is a balance between social competence and anger/aggression/anxiety/withdrawal.

Peabody Picture Vocabulary Test – III (PPVT-III: Dunn & Dunn, 1997)

Peabody Picture Vocabulary Test – III (PPVT-III) was used to measure receptive vocabulary. Research assistants asked children to point to the picture that matches the words spoken by the examiners. The scores were converted to standard scores. Reliability was tested using modified split-half procedure, and the median reliability was .94 (ranging from .86 to .97). Alternate-forms reliability coefficients were also calculated by administering two different test forms to the same group of people. The coefficients computed from the standard scores were from .88 to .96 (median = .94). Validity was also investigated using other measures of vocabulary and verbal ability (WISC-III; KAIT; K-BIT; and OWLS). They found moderate to high correlations, with coefficients ranged from .62 to .91, supporting that PPVT-III is a valid instrument that measures some aspects of children's intelligence, verbal ability quite well.


Family And Child Experiences Survey (FACES)

Social Awareness Task. Social Awareness Task was used to test children's knowledge of their social environment. The examiners asked children to tell their full name (both first and last names), age, and date of birth (both month and day). Possible total score was 5 (first name, last name, age, month of their birth, and day of their birth; 1 point each), and reliabilities were from .61 to .63.

Color Name and Counting. Color naming and counting were used to test children's knowledge of colors and their counting ability. A picture containing randomly arranged bears in 10 colors (red, blue, white, pink, green, yellow, brown, purple, yellow, and black) was presented to children. Children were asked to point to each bear and name the color of the bears (2 points for each bear). Following the color-naming task, children were asked to count the bears. The examiners recorded the number at which children stopped counting or became incorrect (1 point if the number was correct). After that, the examiners asked children how many bears there were and recorded their answers (1 point if the answer was 10). Finally, the examiners rated children's one-to-one counting on a scale range from 1 (child could not count or did not try) to 5 (perfect, no mistakes). Color name and counting tasks have been found to be associated with different levels of school readiness skills of preschool children from low-income families (Zill, Resnick, Kim, McKey, Clark, Pai-Samant, Connell, Vaden-Kiernan, O'Brien, & D'Elio, 2001). The reported internal consistency of color names was .94. In addition, validity was examined by investigating correlations of color names and counting with reading scores at the end of kindergarten ($r = .39$ and $r = .40$, respectively) and with general knowledge scale at the end of kindergarten ($r = .38$ and $r = .36$, respectively). A multivariate regression analysis also provided similar results suggesting that counting task was a significant predictor of children's reading scores at the end of kindergarten year.

REFERENCES FOR APPENDIX A

- Arnett, J. (1989). Caregivers in day-care centers: Does training matter? *Journal of Applied Developmental Psychology*, 10, 541-552.
- Bangs, T. E. (1986). *Birth to Three Development Scale*. Allen, TX: DLM Teaching Resources.
- Bayley, N. (1993). *Bayley Scales of Infant Development, Second Edition*. San Antonio: Harcourt Brace & Co.
- Bond, J.T., Galinsky, E., & Swanberg, J. (1998). *The 1997 National Study of the Changing Workforce*. New York: Families and Work Institute.
- Brigance, A. H. (1978). *BRIGANCE Diagnostic Inventory of Early Development*. North Billerica, MA: Curriculum Associates.



Briggs-Gowan, M. J., & Carter, A. S. (2002). *Brief Infant-Toddler Social and Emotional Assessment (BITSEA) manual, version 2.0*. New Haven, CT: Yale University.

Briggs-Gowan, M. J., Carter, A. S., Skuban, E., Horwitz, S. (2001). Prevalence of social-emotional and behavioral problems in a community sample of 1- and 2-year-old children. *Journal of the American Academy of Child & Adolescent Psychiatry*, 40(7), 811-819.

Dunn, L. M., & Dunn, L. M. (1997). *Peabody Picture Vocabulary Test, Third edition*. Circle Pines, MN: American Guidance Service.

Elicker, J., Noppe, I. C., Noppe, L. D., & Fortner-Wood, C. (1997). The Parent-Caregiver Relationship Scale: Rounding out the relationship system in infant child care. *Early Education & Development*, 8(1), 83-100.

Emlen, A. (1998). *AFS Consumer Survey: From parents receiving child-care assistance*. Report prepared for Adult and Family Services Division, Oregon Department of Human Resources.

Harms, T. & Clifford, R. (1989). *Family Day Care Rating Scale*. New York: Teachers College Press.

Harms, T., Cryer, D., & Clifford, R. (1998). *Early Childhood Environment Rating Scale – Revised*. New York: Teachers College Press.

Howes, C., & Stewart, P. (1987). Child's play with adults, toys, and peers: An examination of family and child care influences. *Developmental Psychology*, 23(3), 423-430.

Howes, C., & Smith, E. W. (1995). Relations among child care quality, teacher behavior, children's play activities, emotional security, and cognitive activity in child care. *Early Childhood Research Quarterly*, 10, 381-404.

Kontos, S., & Wilcox-Herzog, A. (1997). Influences on children's competence in early childhood classrooms. *Early Childhood Research Quarterly*, 12(3), 247-262.

Kontos, S., Burchinal, M., Howes, C., Wisseh, S., & Galinsky, E. (2002). An Eco-Behavioral Approach to Examining the Contextual Effects of Early Childhood Classrooms. *Early Childhood Research Quarterly*, 17, 239-258.

LaFreniere, P.J. & Dumas, J.E. (1997). Social competence and behavior evaluation in children ages 3 to 6 years: The short form (SCBE-30). *Psychological Assessment*, 8(4), 369-377.

Mullen, E. M. (1995). *Mullen Scales of Early Learning*. Circle Pines, MN: American Guidance Service, Inc.

Osborne, S. S., Schulte, A. C., & McKinney, J. D. (1991). A longitudinal study of students with learning disabilities in mainstream and resource programs. *Exceptionality*, 2, 81-96. Pianta, R. (1992). *The Student-teacher Relationship Scale*. Unpublished manuscript. University of Virginia, Charlottesville.

Schaefer, E. S., Edgerton, M., & Aaronson, M. (1977). *Classroom Behavior Inventory*. Chapel Hill, NC: The Frank Porter Graham Child Development Center.

Zill, N., Resnick, G., Kim, K., McKey, R. H., Clark, C., Pai-Samant, S., Connell, D., Vaden-Kiernan, M., O'Brien, R., & D'Elio, M. A. (2001). *Head Start FACES: Longitudinal Findings on Program Performance*. Third Progress Report. Mclean, VA: Abt Associates, Inc.