CHILD HOME ENVIRONMENT AS A MEDIATING CONSTRUCT

BETWEEN SES AND CHILD OUTCOMES*

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DRAFT MANUSCRIPT APRIL 1989

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The last five years have witnessed a rebirth of sociological interest in children. Sociologists are investigating such diverse topics as the impact of divorce on child adjustment (Furstenberg and Seltzer 1986), interaction in child peer groups (Mandell 1986; Corsaro 1986; Eder and Hallinan, 1978) and variations in achievement in first grade classrooms (Entwistle et al. 1987, 1988). Adler and Adler (1986) applaud this relative resurgence of activity, and call for renewed efforts both as a mechanism to evaluate sociological theory and as a means to contribute *sociological* insights to the study of child development.

Consistent with this trend, we are developing and testing a model predicting cognitive and social child outcomes as a function of parental working conditions and child care arrangements (Parcel and Menaghan 1988a; Menaghan and Parcel 1988a). Figure 1 presents a schematic representation of this model. We argue that maternal and paternal working conditions influence the socioeconomic status of the household and affect thus both the quality of the home environments that parents directly provide and the nature and quality of the non-parental child care arrangements that parents make. In turn, both home environments and alternative care arrangements are major direct predictors of social and cognitive child outcomes.

In this paper we lay groundwork for our empirical verification of this model by developing a measure of *children's home environments* that can be used in a cross sectional and longitudinal analysis of a large sample of children. According to our model, children's home environment is a critical intervening

variable between maternal working conditions and household economic status, on the one hand, and social and cognitive child outcomes. We posit positive effects of home environment on child outcomes, and argue that parental working conditions indirectly and household economic status directly influence children's home environment. Measuring home environment well facilitates testing hypotheses implied by this formulation.

Our data source is the National Longitudinal Survey of Youth (NLSY) which in 1986 surveyed the children of the NLSY mothers; these women had been part of the data set since its inception in 1979. Included in the 1986 panel is a set of items derived from the Home Observation for Measurement of the Environment (HOME) (Bradley and Caldwell 1984; Caldwell and Bradley In Press). Time and survey administration restrictions in a cross-sectional survey format precluded the inclusion of all items used in the original measure. In consultation with Robert Bradley, a subset of items was selected for inclusion. We cannot assume without empirical verification, however, that these selected items form measures that behave precisely as those in the original instrument. Fortunately, there is substantial literature using the full version of the HOME in smaller, non-cross sectional studies, and we can use these findings as a basis for comparison with the findings we derive. In this paper we derive reliable scales from the home environment items included in the survey, and study the relationships between these new measures and other measures implied by our model. In this way we begin to establish the validity of these measures as well as bring preliminary evidence to bear on our substantive arguments.

The Youth Cohort and Children of the NLSY

The Youth Cohort is a panel study of a national sample of youth who were 14-21 years old in 1979. The sample was derived from two sampling frames.

The first was a cross section of youth in the population at that time and the second oversampled black, Hispanic youth, and economically disadvantaged non-black, non-Hispanic youths so as to provide additional cases for analyses of the economically disadvantaged. The cohort was followed up with interviews each year; some items were asked every year while others were asked less frequently. By the middle 1980s a wealth of information had been collected; the general constructs covered included family background information, attitudes and social psychological constructs, detailed information regarding schooling, a wealth of labor force participation information, data on alcohol and drug usage, and detailed information on marital and fertility histories. The NLSY has had a 91.8% retention rate over the duration of the panel (NLS Handbook, 1987).

Of the 4,918 young women in the sample, nearly 60 percent (N=2,918) had become mothers by 1986. With funding from the National Institute of Child Health and Human Development (NICHD), in 1986 the Center for Human Resource Research at The Ohio State University (CHRR) was able to survey the children of the mothers from the Youth Cohort; interviews and assessments were completed for 4,971 children. Given the age of the cohort in 1979, the sampling frames from which it was derived, and the year of the child survey, these children represent early and on time births from a cohort of disproportionately lower socioeconomic status mothers; over a third of the children assessed were born when their mothers were in their teens, and about half were born when their mothers were aged 20 through 24.

A national panel of child development experts was convened by NICHD in order to choose the measures to be included in the survey. Table 1 lists these measures, indicates whether the entire measure or a subset of items was included in the survey, and indicates the ages of the children surveyed for

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each measure. In all cases interviews were conducted face to face with trained field interviewers under the direction of the National Opinion Research Center (NORC) affiliated with the University of Chicago. In many cases the interviewers were the same people who had interviewed the mothers for several years prior to 1986, and thus had developed rapport with the mother and potentially with the children. The data set is publicly available from the CHRR. Of course, the possibility of linking a detailed data set of maternal characteristics, as well as some paternal data, with good measures of child outcomes is an exciting one for sociologists as well as researchers from related disciplines.

In order for such potential to be realized, however, we must be assured that the measurement of the child characteristics themselves is sound. Parcel and Menaghan (1988b) have demonstrated that reliable and valid measures of behavioral problems for children who are at least four years of age can be derived from the survey's set of items derived from the larger Achenbach Child Behavior Checklist. Menaghan and Parcel (1988b) have found that reliable and valid age-specific measures of behavioral style or temperament can also be constructed from items included on the survey. Given this history of successful measure construction, we are optimistic that analogous measures for home environment can be constructed as well.

Measuring Children's Home Environments

The HOME scales were initially devised as a tool for identifying and describing homes of infants and very young children who were at significant developmental risk (Caldwell and Richmond 1967, 1968; Elardo and Bradley, 1981; Bradley et al., 1988). These researchers note that structural and status indicators have been used to predict developmental risk in large samples. They argue, however, that such variables are imperfect indicators of

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developmentally relevant "process" variables within children's home environments; these process variables are the critical causal factors in promoting development. While these processes do vary on average by social class or family structure, such indirect indicators are not very precise predictors for individual cases given the wide range of variation in conditions and experiences *within* social class or family structure categories. Direct measurement of the actual home environment, Bradley argued, would permit more accurate identification of high-risk environments, permitting targeting of early intervention efforts to reduce the magnitude and prevalence of developmental problems. For this reason, the HOME was developed to tap the variables that mediate between socioeconomic status and such outcomes as cognitive development.

Bradley (1985) argues that the HOME is useful in identifying home environments associated with impaired mental development, clinical malnutrition, abnormal growth and poor school performance. It also has been successfully used in several countries outside the United States and with a variety of ethnic groups in the United States including blacks, whites, Mexican Americans and other Spanish speaking Americans. Bradley and Tedesco (1982) identify three major categories of home environmental variables tapped by HOME scales: cognitive variables, including language stimulation, provision of a variety of stimulating experiences and materials, and encouragement of child achievement; social variables, including responsiveness, warmth, and encouragement of maturity; and physical environmental variables, including amount of sensory input and organization of the physical environment. Within these three major categories, early measurement efforts focused on developing appropriate instruments for young infants and toddlers (Bradley and Caldwell, 1977), followed by scale

development for preschoolers (Bradley 1985) and elementary age children (Bradley et al., 1988). The NLSY selected items from each of these age-appropriate measures for inclusion in the 1986 assessments. In this paper we derive measures for infant-toddler, preschool and elementary aged children from the smaller pool of HOME items included in the NLSY.

Factor analysis for the complete *infant* HOME scale supported the development of six subscales from its 45 items (Elardo and Bradley 1981). These subscales include Emotional and Verbal Responsivity of Mother; Avoidance of Restriction and Punishment; Organization of Physical and Temporal Environment; Provision of Appropriate Play Materials; Maternal Involvement with Child; Opportunities for Variety in Daily Stimulation. Elardo and Bradley (1981:118-119) report high inter-rater reliability, and KR-20 measures of internal consistency ranging from .44 (for the subscale tapping Opportunities for Variety in Daily Stimulation) to .89 (for the subscale tapping Organization of Physical and Temporal Environment). They report appropriately signed, moderately sized correlations with socioeconomic status, maternal education and child cognitive outcomes, particularly child verbal ability.

In development of the complete *preschool* version of the HOME, Bradley (1985) reported that factor analysis of the 55 items supported the development of eight subscales. Within the cognitive category, Bradley identifies subscales labeled Language Stimulation, Variety of Stimulation, Stimulation of Academic Behavior, and Stimulation Through Toys, Games and Reading Materials. Social subscales were labeled Pride, Affection and Warmth; Modeling and Encouragement of Social Maturity; and Physical Punishment; and a single Physical Environment subscale was identified. Bradley and Caldwell (1979) report KR-20 measures of internal consistency ranging from .53 to .83. They

report appropriately signed and moderately sized correlations with maternal and paternal education levels, and the crowding ratio. The strongest correlation was between maternal education and stimulation through toys, games and reading materials.

The complete HOME scale for *elementary-age* children contained 59 items intended to tap aspects of the quality and quantity of cognitive, social and emotional support made available to the child in the home environment (Bradley et al., 1988). In analyses of these items Bradley et al. again identified eight subcategories within the three broad categories of cognitive stimulation, emotional support, and good physical environment. They label these: Growth-Fostering Materials and Experiences; Provision for Active Stimulation; Family Participation in Developmentally Stimulating Experiences; Emotional and Verbal Responsivity; Encouragement of Maturity; Emotional Climate; Paternal Involvement; and Aspects of the Physical Environment. These subscales have low to moderate correlations with socioeconomic status, parental occupations, and mother's education, as well as with children's academic achievement and classroom behavior.

CONSTRUCTION OF MEASURES OF HOME ENVIRONMENTS FOR NLSY CHILDREN

Following these arguments and findings, we expect to find that exploratory factor analyses of available items will yield a multiple dimension solution corresponding to at least several of the dimensions noted above as part of the original HOME. Because of the smaller number of items available in this data set, we may derive fewer than eight interpretable factors from our factor analyses. We expect significant correlations between social class measures and the dimensions of the HOME we derive, as well as between these dimensions and measures of cognitive development. We expect somewhat weaker, though still significant, associations between maternal education and our

dimensions, as well as with paternal education if the mothers are married. There is no reason to expect sex difference in our HOME measures, although we expect lower values on them for non-white as compared with white families (Elardo and Bradley, 1981:137) due in part to the association between race and low SES.

We have noted that the NLSY mothers are a disproportionately lower socioeconomic status group. To correct for this, all analyses were conducted with weighted samples, where the weights were constructed to reflect a nationally representative sample of households. The fact that the sample contains a disproportionate number of children from lower socioeconomic status households therefore does *not* bias the analyses since these cases have been weighted down to reflect their relative frequency in the larger population. Their presence in the sample does help to increase the reliability of the estimates derived using the data, particularly if one is interested in estimates for such subgroups.

Scale Construction for Infants and Toddlers (Children Under Age Three)

Items and Measures Mothers of infants and toddlers were asked questions regarding the number of children's books they had, frequency of reading to the child, number of appropriate toys, frequency of outings, frequency of verbal interaction with the child while the mother worked, frequency of meals with two parents, and frequency of spankings last week. Interviewers reported on maternal restrictions of the child and discipline during the interview, maternal interactive style with the child, whether the mother provided appropriate toys during the interview, and whether there were physical hazards within the child's range.

Table 2 shows item means and standard deviations, and the factor analysis involving the items. On the average, children are read to about once a week;

they are taken out a few times a week; they go to the grocery almost every week; they have close to four push-pull toys and close to five soft cuddly toys; several times a week they eat with both parents; they are spanked about eight times per week. Interviewers report that during the interview most mothers refrained from physical punishment and restrictive behavior, that they spoke pleasantly with the child and hugged or kissed them; they kept the child in view and there were no hazards within the child's reach. Fewer mothers responded verbally to the child during the interview or provided toys or activities.

We used principal axis factoring and oblique rotation. While five factors initially met the eigenvalue criterion, the pattern of loadings suggested that three factors could adequately account for item variation. We constrained a second extraction to three factors, and all were substantively interpretable. An item is interpreted as loading on a factor if it loaded at .35 or higher. We named the first factor Stimulation since items loading on it included those relating to provision of books and toys, reading to the child, verbally responding to the child during the interview and taking the child on outings. We named the second factor Warm Involvement since items loading on it included interviewer report items tapping maternal verbal involvement with the child, maternal physical affection, provision of toys, and whether mother kept the child in view. We named the third factor Non-Punitive since items loading on it tap maternal reports of child spanking, and interviewer reports of whether the mother slapped/spank the child during the interview or restricted the child's exploration. Three of the maternal report items, belief in parents teaching children skills, frequency of meals with parents and frequency of mother talking to child during her work, failed to load on any of the factors.

We formed factor-based scales following this solution, where items were transformed into standard scores prior to summing items to create the scales. Alpha reliabilities range from .72 for Stimulation to .50 for Non-Punitive. This latter measure's low reliability is likely a function of it containing only three items. These measures are substantively consistent with the more narrowly defined original HOME subscales reported by Elardo and Bradley (1981). In addition, we formed a composite of the items comprising each of these scales. This composite has a reliability of .63.

Table 3 presents two sets of correlations. Above the diagonal are correlations among the factor based scales just discussed. We see a moderate relationship between Stimulation and Warm Involvement, and a modest negative relationship between Stimulation and Non-Punitive. There is a weak negative relationship between Non-Punitive and Warm Involvement. Correlations below the diagonal are among the true factors obtained from the factor solution discussed above. They mirror those for the factor based scales, although they are slightly weaker in magnitude.

Evidence for Validity   In order to provide evidence on construct validity, we assess relationships between each scale and a number of dimensions we would expect on the basis of previous theory and research to be related to them. We expect that child home environment will be positively related to SES and parental education, negatively related to race, and positively related to child's measured mental ability. In addition, we assess the relationships between the dimensions of home environment we derive here and dimensions of child behavioral style (or temperament). We expect that children with more negative home environments will be more likely to be Shy, Fussy-Fearful, Dependent-Demanding; those with positive home environments we expect to be more Active, Predictable, Compliant, to display Positive Affect, and to create a

Positive Interviewer Impression.

Table 4 summarizes the zero order correlations needed to assess these expectations. Higher income households and those with married mothers provide more stimulating, warm and non-punitive home environments, while those households in poverty provide less stimulating, less warm and more punitive home environments. Employed mothers provide more stimulating home environments, and non-punitive homes are more likely to have mothers of higher occupational statuses who are earning higher wages. Mothers who have greater cognitive capacity and educational attainment provide more positive home environments than less educated, less cognitively oriented mothers. Non-white mothers provide less stimulating, less warm and more punitive homes than white mothers. Older mothers provide less stimulating homes, but warmer and less punitive home environments. Spouse's educational attainment is positively associated with stimulation and non-punitiveness. Male children occupy less stimulating and more punitive home environments than female children, while older children have more stimulating, warmer and less punitive environments than younger children. First born children receive more stimulation and more warmth than later born children.

Home stimulation is associated with better Memory for Location, and more Active and Predictable infant temperaments. A positive home environment is associated with Positive Affect, a measure that contains an indicator of frequency of smiling. Positive relationships between affect and home environments are maintained even when children under three months of age, for whom smiling is a less developmentally expected behavior, are omitted from the analysis. Children whose temperaments are seen as demanding-dependent are likely to have less stimulating, less warm, and more punitive home environments, while children seen as compliant have more positive home

environments. Children who make more positive impressions on the interviewer have warmer and more stimulating home environments. Children seen as Fussy-Fearful have more punitive homes than children seen as less Fussy-Fearful. These findings suggest support for most of the hypotheses noted above.

The final column of the table shows the correlations between each of these measures and the composite. These relationships are similar in sign and magnitude to those discussed above. In addition, we considered the possibility that these findings may be influenced by the inclusion of children under six months of age, who because of their age have had less time to be affected by some of the environmental variables included in the analysis, and for whom behavioral style may be measured with less reliability. When children under six months are excluded from the analyses presented in Table 4, findings involving the current economic and family background variables are either maintained or strengthened, thus suggesting that the longer the children participate in the home environment, the stronger the connections between household and background factors, and home environment for children. On the other hand, when we look at the relationships between child characteristics and home environment, some relationships weaken. In particular, the relationships between each dimension and age are weaker when the youngest infants are excluded, thus suggesting that the very youngest children are on the average are likely to receive lower scores on the dimensions than older infants and toddlers. Possibly these measures are most relevant for children several months older than those under six months. Findings are also weaker for Positive Affect, the measure that includes frequency of smiling. The correlation had been inflated because many of the youngest children, for whom smiling is not developmentally expected, were receiving low scores on Positive Affect, thus "falsely" strengthening the correlation as originally reported.

Scale Construction for Preschool Children

Items and Measures. Mothers of children three to five years old were asked questions regarding frequency of cognitive stimulation, resources useful in promoting cognitive development, frequency of several types of outings with the child, disciplining strategies and questions on father presence/involvement. In addition, as part of the Child Supplement, interviewers assessed the warmth with which the mother interacted with the child, maternal acceptance of child actions/avoidance of physical punishment, the physical environment of the home as well as items tapping language stimulation and encouragement of social maturity.

Table 5 reports the means and standard deviations of these items, and the results of the factor solution for them. As Bradley had also found, most families "pass" these items, with more than 90 percent of mothers reporting help with numbers, letters, and colors and observed as conveying positive feeling about the child. Similarly, over 90 percent of the households were judged to be reasonably clean, varied, and safe. Only small minorities of mothers slapped, spanked, grabbed or shook the child in the interviewer's presence. More variation was apparent regarding provision of materials and stimulating outside experiences, such as having books and records, or taking the child to a museum. Physical punishment (hitting or spanking) was a common response to children's expressions of anger toward their parents, with only 38 percent of mothers reporting that they would not hit or spank if their child struck them in anger.

We again used principal axis factoring and an oblique rotation. While initial analysis suggested that nine factors met the eigenvalue criterion, inspection of these findings suggested that a smaller number of factors would explain almost as much item variation and would likely produce more reliable

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scales. When we constrained the solution to extract five factors, all five were substantively interpretable. We interpreted an item as loading on a factor if it loaded at an absolute level of .35 or greater. The first factor we named Cognitive Stimulation; loading on it were the items regarding home resources for cognitive stimulation and frequency of family stimulation of child's cognitive capacity. The second factor we named Acceptance of Child's Anger since the two items loading on it suggested constructive response to child misbehavior and the absence of physical punishment for the expression of angry feelings. The third factor we named Warm Response because the four items loading on it all suggest affectively positive maternal-child interaction. The fourth factor we have named Good Physical Environment since the four items loading on it tap whether the interviewer rated the home as clean, safe, sufficiently light and reasonably free from clutter. The fifth factor we have named Not Violent because the two items loading on it reflect interviewer observation that the mother did not restrict, shake, grab, slap or spank the child during the interview. Seven of the NLSY HOME items had relatively low communalities with the other items and failed to load on any scale. These include extent of food choice, hours of TV watching, frequency of eating meals with two parents, number of spankings, frequency of outings and museum visits, and introducing the interviewer to the child.

We again formed factor-based scales corresponding to this solution. Alpha reliabilities range from .59 for Not Violent to .77 for Acceptance of Child Anger. These measures of internal consistency are within the range of those reported by Elardo and Bradley (1981) for the subscales of the original HOME, which were more narrowly defined and had a higher number of items for each subscale than the NLSY measures.

In Table 6, above the diagonal we present the correlations among the

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factor based scales just described; below the diagonal we present the
correlations among the original extracted factors. We see that there are
modest positive correlations among the factors, except for No Observed
Violence. These relationships are basically repeated when we inspect the
correlations among the constructed subscales, except that these latter
relationships are somewhat weaker. This is particularly true in the case of
the relationships involving Accepts Anger and (1) Cognitive Stimulation, (2)
Good Physical Environment and (3) Warm Response.

Evidence for Validity. We assess relationships between each scale and a
number of dimensions we would expect on the basis of previous theory and
research to be related to them to demonstrate construct validity. As noted
above, we expect that child home environment will be positively related to SES
and parental education, negatively related to race, and positively related to
child's measured mental ability. In addition, we assess the relationships
between the dimensions of home environment we derive here and dimensions of
child behavioral problems (Parcel and Menaghan, 1988) and child behavioral
style (or temperament) (Menaghan and Parcel, 1988b). We expect that children
with more negative home environments will be more likely to have behavioral
problems either causing them to "act out" (Externalizing/Undercontrolled) or
to internalize their difficulties (Internalizing/Overcontrolled). Similarly,
we expect children in more positive home environments to be more often
perceived as Compliant, and less often seen as Dependent-Demanding or Shy.

Table 7 summarizes the zero order correlations needed to assess these
expectations. We include only the scales representing Cognitive Stimulation,
Warm Response and Physical Environment because the remaining two measures
correlated with only a few of the included variables. In addition, we include
a composite of the items that comprise the three scales listed above because

it is useful to investigate how such a composite may behave with reference to the included measures. The alpha reliability of this composite is .71. There are positive relationships between current economic and occupational conditions and the scales we derive. Those households with higher income have greater cognitive stimulation, mothers who respond more warmly to their children, and a physical environment conducive to development. Families in poverty are less likely to have homes characterized by cognitive stimulation, maternal warmth and an appropriate physical environment. The scales are positively associated with maternal employment status, and with mother's marital status. Among employed mothers, those who earn more and have higher occupational statuses have more positive home environments. With the exception of the relationships with mother's employment status, correlations are stronger with Cognitive Stimulation than with either of the remaining two scales. In each case, the composite is significantly associated with the SES measure in the direction of the components.

Maternal education is positively associated with the several dimensions of home environment, as is maternal cognitive achievement. Non-whites have lower scores on the home scales than do whites. The older the mother at the birth of the evaluated child, the higher the home scales. Among married mothers, spouse's education is positively associated with the home environment. Again, relationships are stronger with Cognitive Stimulation than with the remaining two scales, and the composite is significantly associated with the background characteristic in the direction of the components.

We find no gender differences in home environment, but age of the child does make a difference: older children have greater access to cognitive stimulation than do younger children, although their homes are characterized

by less maternal warmth than is true for younger children. Children in lower birth order positions in their families (only or oldest) have more positive home environments.

The new home subscales also correlate with several child cognitive and behavioral assessment measures. Children who have more favorable home environments score more highly on the McCarthy Verbal Memory Subscale, the PPVT, and the PIAT Math and Reading subscales than those who score lower. The relationships with the composite are consistent with those of the components. Children who score high on either the Externalizing or Internalizing Behavior Problems scales are less likely to have home environments conducive to development than children who have fewer behavior problems. Shy and Dependent-Demanding children are less likely to have positive home environments than children who are outgoing or less dependent-demanding. Compliant children have home environments more conducive to development than less compliant children. Again, relationships tend to be stronger with Cognitive Stimulation than with the remaining subscales (the relationships with Shy are an exception), and the composite tends to behave as do the components.

Scale Construction for Children Six Years and Older

Items and Measures. As with the preschool measures, a subset of items were selected for inclusion in the NLSY survey, where items were drawn from each of the eight categories. Twenty one of the 30 items were derived from maternal reports and the remaining items were taken from interviewer reports.

Table 8 lists the included items, their means and standard deviations and the factor solution involving these data. Inspection of means suggests somewhat more variation in response than for preschool children, with somewhat fewer mothers conveying positive feelings about the child or conversing

pleasantly with the child during the interview. Reading to the child was lower than for younger children, as was eating with two parents. Consistent with findings for younger children, physical environments were generally judged to be adequate, while non-punitive responses to children's anger were relatively infrequent, and spankings were common. Provision of skill-oriented lessons or musical instruments was relatively low, and visits to museums were uncommon. On the other hand, most parents reported that they encouraged hobbies, and discussed TV shows with their elementary-aged children when they watched together.

As with the preschool item pool, initial factor analyses suggested that nine factors met the eigenvalue criterion, and a solution with nine factors produced narrow-band factors with only two or three items per factor. Inspection of this solution suggested that a smaller number of factors would adequately account for item variation and increase the likelihood of constructing reliable, interpretable scales. We constrained a second factor solution to five factors, all of which were substantively interpretable. The first factor we named Paternal Involvement because the three items loading on it include frequency of time spent with father, frequency of time spent with father outdoors, and the frequency with which the child eats with both parents. The second factor we have named Expectations for Self Care. Items loading on this factor include the frequencies with which the child is expected to make his/her own bed, clean his/her own room, clean up spills, bathe him/herself and pickup his/her own things. The third factor we have named Warm Response. Items loading on this factor include four interviewer report items: mother encouraged the child's verbal contributions to the interview, mother answered the child verbally, mother's voice conveyed positive feelings about the child, and mother conversed pleasantly with the

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child while the interviewer was there. The fourth factor we have named Enrichment Opportunities. Included items are whether the child takes lessons or belongs to any organizations, the frequency with which a family member takes the child to a museum, the frequency with which the family visits friends/relatives, and the number of books the child owns. Falling short of the .35 criterion were several related items: the frequency with which parents read to the child, and encourage him/her to pursue hobbies, as well as the frequency with which the child reads for enjoyment. We have named the fifth and final factor Good Physical Environment. Items included are the interviewer assessment items tapping whether all visible rooms were reasonably clean and minimally cluttered, whether the home interior was dark or perceptually monotonous, as well as the number of books the child owns. The level of potential physical danger in the household and immediate neighborhood fell just short of the .35 criterion on the same factor.

We again formed factor based scales using standardized items as suggested by the factor solution and calculated Cronbach's alpha to assess internal consistency of the scales. Alpha reliabilities for the first three scales ranged from .76 for Expectations for Self-Care to .87 for Paternal Involvement. Reliabilities for the remaining two scales were noticeably lower, bordering on unacceptability. To improve reliability of these scales, we augmented them to include the items which were conceptually consistent with these measures, had attained significant loadings on the relevant construct in Bradley and Caldwell's work, and had factor loadings close to the .35 criterion; loadings for these items are displayed in parentheses on Table 5. The final Enrichment Opportunities has an alpha reliability of .59. The final Physical Environment has an alpha reliability of .55. As with the other two age groups, we include a composite measure composed of the items included in

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Enrichment Opportunities, Warm Response, and Physical Environment. The alpha reliability for this composite is .71.

Table 9 displays the intercorrelations among factors and factor-based scales. For ease in comparison with the preschool subscales, we have displayed the cognitive, warm response, and physical environment factors first, followed by the Expectations for Self-Care and Paternal Involvement factors. As with the preschool subscales, there are moderate inter-correlations among both the factors and the constructed subscales, although correlations between Expectations for Self-Care and the other factors are somewhat lower.

Evidence for Validity. Tables 10 and 11 contain correlations between the scales derived above and the set of household, family background, child characteristics, and child cognitive and behavioral assessment variables discussed above for the preschool children. To ease comparison with the findings for preschool children, we will first discuss the conceptually parallel cognitive, warmth, and physical environment measures (Table 10). It is important to note the difference, however, between the two "cognitive" measures, with the preschool measure emphasizing direct parent-child interaction (helping with letters, etc.) and the elementary age measure stressing provision of opportunities for stimulation (taking the child places, arranging for lessons). The physical environment measures also differ somewhat, since attending to possible dangers in a preschooler's reach does not tap the potential neighborhood dangers readily accessible to the older child.

As expected, better economic and occupational conditions tend to be associated with better home environments, but the results are somewhat weaker and more spotty than for the preschool measures. Higher household incomes are

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associated with more Enrichment Opportunities for children and a better physical environment while poverty status households are lower on these dimensions, as well as lower in maternal warm response. Mothers' marital status and employment status are related to better physical environments. Married mothers are higher on Warm Response but not significantly higher on the provision of enrichment opportunities; employed mothers are not significantly higher on Warm Response but are higher on Enrichment Opportunities. Among employed mothers, higher occupational status is associated with better home environments; higher rates of pay are associated with more enrichment opportunities and better physical environments but, unexpectedly, to lower Warm Response. Both mothers' education and cognitive achievement are positively associated with better home environments; for married mothers, spouse's education is also related to better home environments. Mothers younger at the birth of this child, and non-white mothers, have less positive home environments. We find no differences by child gender, but older children experience less maternal warmth as well as lower enrichment opportunities. Children in lower birth order positions encounter more positive home environments.

We also expect the home environment to be associated with higher cognitive achievement and fewer behavioral and emotional problems. These expectations are generally supported, with low to moderate correlations between the three home subscales and each measure of child cognitive outcome. Children in better physical environments and with more enrichment opportunities tend to have fewer behavior problems, and are perceived as more compliant and less dependent-demanding. Somewhat contrary to expectation, and at variance with the findings for preschoolers, mothers' Warm Response is not significantly associated with behavioral style or behavior problems (except

for the association with shyness). Overall, relationships are low to moderate and appropriately signed. They tend to be somewhat weaker than for preschool children, especially for Warm Response. The correlations with the composite are generally similar in sign and magnitude to those discussed above. Correlations between the composite and the measures of cognitive ability, however, are somewhat stronger than those involving the components.

Table 11 displays the correlations for Expectations for Self-Care and Paternal Involvement. Patterns for Expectations for Self-Care are mostly appropriately signed but weak and often non-significant; Expectations are higher for older children and for girls. Several relationships are unexpected: mothers who were younger at the birth of this child, and non-white mothers, have higher expectations that their children demonstrate self-care; and children in homes with higher expectations for self-care are more often viewed as non-compliant (although also less shy).

The strongest correlate of involvement with a father or father-figure, not surprisingly, is mother's marital status (r=.60). Married mothers have higher household incomes and are less likely to live in poverty; and these variables also show bivariate relationships with father involvement. Given the potentially different meanings of variations in father involvement among married and single mother families, the set of validity correlations were also calculated separately for these two groups (not shown).

For both married and unmarried groups, father involvement is higher when mothers are employed; non-white mothers, and mothers younger at the birth of this child, have lower father involvement. Father involvement is higher for younger children. Correlates with child outcomes are not particularly impressive in either group: father involvement is weakly positively associated with some of the cognitive measures (PPVT and PIAT math) but has

non-significant associations with others (McCarthy and PIAT reading).
Relations are weak (all correlations are less than or equal to an absolute
.10) but appropriately signed for the behavior problems and behavioral style
measures.

Among married mothers, father involvement is unrelated to the economic
variables (income and poverty status). When mothers are employed, it is
higher when mothers are earning higher wages. Neither mother's nor spouse's
educational attainment is associated with father involvement, nor is mother's
cognitive achievement. Among these children living with married parents,
father involvement is higher for boys.

For children living with unmarried mothers, for whom father involvement
demands visitation (doing things with the child) and contact with the child's
mother (eating with both parents), the pattern of associations is somewhat
different. Here, father involvement is correlated with higher household
income and non-poverty status, perhaps because father involvement extends to
greater financial child support. But when single mothers are employed, father
involvement does not vary with her wage, and it is not related to child
gender. Father involvement still does not vary with mother's education, but
mothers with higher cognitive achievement report more father involvement.

In summary, higher Expectations for Child Self-Care and higher Father
Involvement are relatively weaker predictors of concurrent child development,
and their relationships with more advantaged economic and occupational
backgrounds are less consistent.

CONCLUSION

Despite the need to rely on subsets of the previously developed measures
of children's home environments, we have been able to derive a small set of

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scales that reflect the major concepts underlying the original measures--
cognitive stimulation, emotional warmth and support, and good physical
environments. Among infants and toddlers under three, we derived measures
tapping stimulation, warmth of maternal response, and non-punitiveness. Among
children aged 3 to 5, we derived measures tapping cognitive stimulation,
warmth of maternal response, safety of the immediate physical environment,
acceptance of child anger, and whether the interviewer observed the mother
engaging in physical punishment of the child. Among elementary school aged
children, measures tapped opportunities for enrichment, warmth of maternal
response, safety of the immediate physical environment, degree of paternal
involvement and level of expectations for self care.

    While all of the derived measures correspond to one of the three major
concepts underlying the original measures as noted above, the more specific
content may vary with the age of the child. While warmth of maternal response
is an identifiable dimension of children's home environments across age
groups, the nature of stimulation provided varies by child age. Among
infants, stimulation referred to provision of age appropriate toys and books
useful in facilitating both cognitive and social development. Among three to
five year olds, stimulation referred more specifically to cognitive
stimulation, while among elementary aged children, stimulation referred to
opportunities for enrichment such as being taken to live performances or
taking lessons. Safety of the physical environment appears as a relevant
dimension for children who are at least three years of age, while paternal
involvement and expectations for self care appear relevant as children reach
school age. The specific connotations of dimensions denoting discipline also
vary by age. Avoidance of physical punishment is salient for children under
three, while for three to five year olds, constructive response to child's

anger and the actual interviewer observation of physical punishment during the interview appear. Among the older children, these dimensions are replaced by expectations for self care, thus tapping the degree to which children have internalized rules regarding appropriate responsibilities for self care formerly borne by parents. Of course, differences in derived dimensions reflect both differences in the *type* of included items across age groups and variations in the *frequencies* with which these types were selected for the survey instrument. However, the derived dimensions have face validity with reference to developmental stages of children, and to their respective home environments.

As with the complete HOME scales, relationships with SES and family structure are statistically significant but only moderate in size. Home environments vary within structural categories, and the direct measurement of the quality of the home environment provides information that is not captured by structural indicators. Still, the generally moderate relationships between the HOME measures and household and child outcome variables suggest the model we posited in Figure 1 is a plausible one. Zero order relationships appear sufficiently strong to suggest estimation of the multivariate model will be useful. While specific conclusions await empirical verification, we expect relationships between SES and our home measures to be maintained in the multivariate; similarly we expect that home measures will predict several child outcomes, particularly for children at least three years of age. We anticipate that upon completion of such analyses, we will have achieved a more complete understanding of the ways in which place in the social structure comes to exert its influence on adult actions and on the development of subsequent generations, and of what we expect to be the critical intervening role of child's home environment in this process.

REFERENCES

Adler, Patricia A., and Peter Adler, Eds. 1986. *Sociological Studies of Child Development Vol. 1.* Greenwich: JAI Press

Bradley, Robert H. 1985. "The Home Inventory: Rationale and Research". Pp. 191-201 in *Recent Research in Developmental Psychopathology, Book Supplement to the Journal of Child Psychology and Psychiatry.* Edited by J. Stevenson. Oxford: Peragamon Press.

_____., and L. Tedesco. 1982. "Environmental Correlates of Mental Retardation". In *Psychology of the Abnormal Child.* Edited by J. Lachenmeyer, and M. Gibbs. New York: Gardner Press.

_____., and Bettye M. Caldwell. 1977. "Home Observation for Measurement of the Environment: A Validation Study of Screening Efficiency." *American Journal of Mental Deficiency* 81:417-420.

_____. 1979. "Home Observation for Measurement of the Environment: A Revision of the Preschool Scale". *American Journal of Mental Deficiency* 84:235-244.

_____. 1984. "The HOME Inventory and Family Demographics." *Developmental Psychology* 20(2):315-320.

Bradley. Robert, H., Bettye M. Caldwell, Stephen L. Rock, Holly M. Hamrick, and Pandia Harris. 1988. "Home Observation for Measurement of the

Environment: Development of a Home Inventory for Use With Families Having
Children 6 to 10 Years Old". *Contemporary Educational Psychology* 13:58-71.

Caldwell, Bettye M., and J. B. Richmond. 1967. "Social Class Level and
Stimulation Potential of the Home". In *Exceptional Infant: The Normal
Infant* Edited by J. Hellmuth. Seattle: Special Child Publications.

Caldwell, Bettye M., and J. B. Richmond. 1968. "The Children's Center-A
Microscosmic Health, Education, and Welfare Unit. In *Early Child Care: The
New Perspectives*. Edited by L. Dittman. New York: Atherton.

Caldwell, Bettye M., and Robert H. Bradley. (In Press). *Home Observation for
Measurement of the Environment*. New York: Dorsey.

Corsaro, William. 1986. "Discourse Processes Within Peer Culture: From a
Constructivist to an Interpretive Approach to Childhood Socialization."
Pp. 81-105 in *Sociological Studies of Child Development Vol. 1*. Edited by
Patricia A. Adler, and Peter Adler. Greenwich: JAI Press.

Eder, D., and M. T. Hallinan. 1978. "Sex Differences in Children's
Friendships." *American Sociological Review* 43:237-250.

Elardo, Richard D., and Robert H. Bradley. 1981. "The Home Observation for
Measurement of the Environment (HOME) Scale: A Review of Research".
Developmental Review 1:113-145.

Entwistle, Doris R., Karl Alexander, Aaron M. Pallas, and Doris Cadigan.

1987. "The Emergent Academic Self-Image of First-Graders: Its Response to social Structure." *Child Development* 58:1190-1206.

_____. 1988. "A Social Psychological Model of the Schooling Process Over First Grade." *Social Psychology Quarterly* 51:173-189.

Furstenberg, Frank J., Jr., and Judith A. Seltzer. 1986. "Divorce and Child Development." *Sociological Studies of Child Development* 1:137-160.

National Longitudinal Survey Handbook. *1987.* Columbus, Ohio: Center for Human Resource Research, The Ohio State University.

Mandell, Nancy. 1986. "Peer Interaction in Day Care Settings: Implications for Social Cognition." *Sociological Studies in Child Development* 1:55-79.

Menaghan, Elizabeth G., and Toby L. Parcel. 1988a. "Intergenerational Work and Family Linkages: Mothers' Employment Conditions, Child-Care Arrangements, and Child Outcomes." Presented at the National Council on Family Relations Theory Construction and Research Methodology Workshop, Philadelphia, November.

_____. 1988b. "Measuring Temperament in a Large Cross-Sectional Survey: Reliability and Validity for Children of the NLS Youth." Unpublished ms.

Parcel, Toby L., and Elizabeth G. Menaghan. 1988a. "Linking Maternal Employment and Child-Care Arrangements to Child Development." Research Proposal submitted to National Institutes of Health, National Institute of

Child Health and Human Development 2/1/88 (HD23467), funded.

_____. 1988b. "Measuring Behavior Problems in a Large Cross Sectional

Survey: Reliability and Validity for Children of the NLS Youth."

Unpublished ms.

Note

The magnitudes of the relationships between our HOME dimensions and family structure appear to vary by age of child. They are modest for children under three, strongest among three to five year olds, and somewhat weaker for older children. For the youngest children, the requirements of providing care for young children may impose some degree of uniformity on parents, regardless of parental SES. Measures of cognitive capacity and behavioral style for children of this age may not reliable enough to yield stronger associations with our dimensions of home environment. Among the oldest children, again, the correlations are appropriately signed and of modest magnitude. Again, there may be uniformity in the way parents construct home environments for these children; greater reliability in measurement of child cognitive and behavioral assessments likely contributes to stronger relationships with these variables. It is with children three to five years, however, that the correlations are the strongest. It may be that reliabilities of measures are sufficiently high, and within category variation in group means sufficiently low produce stronger relationships. It does appear that traditional measures of SES more consistently predict home environment for children of this age than for other ages, and that home environment is more strongly related to cognitive and social child outcomes than for either older or younger children.

Table 1. Cognitive, Socio-Emotional, and Developmental Environment Measures
for Children of NLSY Women.

Cognitive Measures: Ages of Children Assessed

1. Weschler Intelligence Scale for Children   7 years and older
     Complete Digit Span Subscale

2. Peabody Individual Achievement Test   5 years and older
     Complete Math Subscale
     Complete Reading Recognition Subscale
     Complete Reading Comprehension Subscale

3. Peabody Picture Vocabulary Test   3 years and older
     Complete Test

4. McCarthy Scales of Children's Abilities   3 years through 6 years, 11
     Complete Verbal Memory Subscale   months

5. Memory for Locations (Jerome Kagan)[a]   8 months through 3 years, 11
                                                         months

6. Body Parts (Jerome Kagan)   1 year through 2 years, 11
                                                         months

Socio-Emotional Measures

7. Perceived Competence Scale for Children   8 years and older
   (Susan Harter)
     Complete General Self-Worth Subscale
     Complete Academic Ability SubScale

8. Achenbach Child Behavior Checklist   4 years and older
     Subset of 28 items; mothers' reports

9. Temperament/Behavioral Style   Newborn through 6 years, 11
     Maternal report items vary by child's age;   months
     6 items apply only to infants,
     11 to children under 2, and 20 items to
     children 2 years and older.
     Seven interviewer rating items apply to
     children 8 months and older.

10. Motor and Social Development Scale   Newborn through 3 years, 11
    (Gail Poe)   months

Developmental Environment

11. Home Observation for Measurement of the Environment
    (Caldwell and Bradley)   All Children
    Subsets of items from the Infant, Preschool,
    and Elementary versions of the HOME scale;
    include mothers' reports and interviewer ratings.
    Items vary by children's age.

[a]Originators of measures are indicated in parentheses when not part of title.

Table 2. Factor-Based Home Environment Scales for Children Under Three: Factor Structures and Item Statistics.

ITEM CONTENT	FACTOR-ITEM CORRELATION[a]			MEAN[b]	S.D.
	I	II	III		
Maternal Report Items:					
Number of books child's own	.78			2.80	1.18
Frequency of reading stories to child	.73			4.03	1.83
Number of push-pull toys	.67			3.68	1.80
Frequency child is (taken) out	.38			5.52	1.87
Number of cuddly or role-playing toys	.37			4.74	0.85
Frequency family takes child to grocery	.35			2.93	1.00
Belief parents should teach child skills				3.48	0.59
Frequency of meals with two parents				3.30	1.87
Frequency mother talks to child while busy working				4.34	0.76
Number times spanked last week			.47	8.27	2.46
Interviewer Report Items					
Mother did not slap or spank child			.61	0.94	0.23
Mother did not restrict child's exploration			.42	0.84	0.37
Mother spontaneously spoke pleasantly to child		.62		0.88	0.32
Mother kissed or hugged child		.55		0.75	0.43
Mother provided toys, activities		.55		0.57	0.50
Mother kept child in view		.52		0.88	0.33
Mother responded verbally to child	.41	.51		0.67	0.47
No hazards in infant/toddler's range				0.91	0.29
Eigenvalues	3.35	1.84	1.53		
Percent of Variance	.19	.10	.08		
Factor-Based Scales:					
Number of Items	7	5	3		
Cronbach's alpha	.72	.71	.50		

[a] All factor-item correlations .35 and higher are displayed. Factor-analytic solutions were estimated using weighted data, and specified principal axis factoring and oblique rotation. Due to listwise deletion, actual number of cases used in the factor analysis was 1,505. Factor labels are I, Stimulation; II, Warm Involvement; III, Non-Punitive.

[b] Item statistics were calculated with weighted data. Using listwise deletion of cases, actual number of cases is 1,505. Possible values for number of books were: 1 (none), 2 (1 or 2 books), 3 (3 to 9 books) and 4 (10 or more books. Frequency of reading stories was coded 1(never), 2 (several times a year), 3 (several times a month), 4 (once a week), 5 (about 3 times a week), and 6 (every day). Frequency child is taken out is coded 1 (never), 2 (once a month or less), 3 (a few times a month), 4 (about once a wwk), 5 (a few times a week), 6 (4 or more times a week), and 7 (every day). Frequency child goes to grocery is coded 1 (hardly ever), 2 (once a month), 3 (once a week), 4 (twice a week or more). Frequency child eats with two parents is coded 0 (never), 1 (once a month or less), 2 (once a week), 3 (several times a week), 4 (once a day), and 5 (more than once a day). Frequency mother talks to child while she is busy working is coded from 1 to 5 to correspond with never, rarely, sometimes, often, and always.
Number of soft toys and number of push-pull toys ranged from 0 to 90; values exceeding 5 were collapsed to 5. Number of spankings ranged from 0 (50 percent of the respondents) to 50 (a single respondent). Ten or more spankings were collapsed to 10.
Beliefs about teaching have values from 1 to 4 as follows: parents should always (1) or ususually (2) allow children to learn on their own, or parents should usually (3) or always (4) spend time teaching their children.

Table 3. Correlations among Factors and Factor-Based Scales for Children
          Under Three.[a]

FACTOR-BASED SCALES:	STIMULATION	WARM INVOLVEMENT	NON-PUNITIVE
STIMULATION	1.00	.41	-.21
WARM INVOLVEMENT	.30	1.00	-.09
NON-PUNITIVE	-.15	-.06	1.00

[a]Correlations among the constructed factor-based scales are displayed above
the diagonal; correlations among the true factors obtained from the factor
solution are displayed below the diagonal.

Table 4. Evidence for Construct Validity of Home Environment Scales for
Children Under Age Three: Correlations with Current Economic
and Occupational Conditions, Family Background Characteristics,
Child Characteristics, and Child Behavioral and Cognitive
Assessments

	STIMULATION	WARM INVOLVEMENT	NON-PUNITIVE	COMPOSITE
Current Economic and Occupational Conditions				
Household Income	.11	.08	.11	.15
Poverty Status (1=yes)	-.15	-.11	-.09	-.19
Mother's Marital Status (1=married)	.14	.11	.05	.18
Mother's Employment Status (1=employed)	.08	.03ns	.02ns	.09
If Mother is Employed:				
Mother's Hourly Rate of Pay	-.01ns	-.04ns	.11	.00ns
Mother's Occupational Status	-.02ns	-.02ns	.08	.00ns
Family Background Characteristics				
Mother's Educational Attainment	.12	.12	.11	.19
Mother's Cognitive Achievement	.20	.18	.12	.28
Mother's Minority Status (1=non-white)	-.22	-.11	-.08	-.25
Mother's Age at Child's Birth	-.11	.04	.16	.02ns
If Mother is Married:				
Spouse's Educational Attainment	.05	.02ns	.06	.07
Child Characteristics				
Gender (1=male)	-.08	-.04ns	-.10	-.11
Age in Months	.60	.14	-.26	.35
Birth Order	-.20	-.10	-.04ns	-.20
Child Cognitive and Behavioral Assessments[b]				
Memory for Locations	.25	-.02ns	.01ns	.15
Behavioral Style:				
Active	.08	-.00ns	-.02ns	.03ns
Predictable	.21	.05ns	-.01ns	.19
Positive Affect	.45(.26)[c]	.26(.16)[c]	-.13(-.05)[c]	.40(.22)[c]
Fussy-Fearful	-.01ns	-.01ns	-.10	-.05
Dependent-Demanding	-.21	-.12	-.09	-.23
Shy	-.06ns	.00ns	.05ns	.00ns
Compliant	.14	.13	.11	.19
Positive Interviewer Impression	.22	.15	.00ns	.20

[a] Correlations are calculated with weighted data, using pairwise deletion.
All correlations are statistically significant at the .05 level or better,
unless flagged with ns (not significant). Correlations using mother's hourly
rate of pay and the Duncan measure of the status of her occupation are
calculated for employed mothers only.

The mother's cognitive achievement is measured by the Armed Services
Vocational Aptitude Battery, administered in 1980. All other measures are as
reported in 1986.

[b] Memory for Locations was not assessed for children under 8 months old.
Interviewer Impressions were asked only for children 24 through 35 months.
Behavioral Styles measures varied by age: Active and Predictable were measured
only for babies under age 1; Positive Affect and Fearful-Fussy were measured
for all babies and toddlers under age 2; Compliant, Shy, and Dependent-
Demanding were measured for children age 2 through 6 years, 11 months.

[c] Since regular social smiling is developmentally constrained in very young
infants, these correlations were also calculated omitting babies under 3
months of age; the revised correlations, shown in parentheses, are lower but

still statistically significant.

Table 5. Factor-Based Pre-School Home Environment Scales: Factor Structures and Item Statistics.

ITEM CONTENT	I	II	III	IV	V	MEAN[b]	S.D.
Maternal Report Items:							
Number of books of child's own	.59					3.64	.72
Family member helps child with shapes, sizes	.59					.79	.41
Frequency of reading stories to child	.50					4.37	1.28
Family member helps child with letters	.48					.91	.29
Family member helps child with colors	.40					.94	.23
Home has record player or tape recorder and at least five children's records or tapes	.38					.63	.48
Number of magazines family gets regularly	.37					2.68	1.46
Family member helps child with numbers	.36					.96	.18
If child hit mother in anger, mother would:							
talk to, send to room but not hit or spank		.88				.38	.49
talk to child but not punish		.66				.19	.39
Amount of choice in mealtime food selection						3.11	.70
Number of hours a day TV is on (R)						6.81	4.08
Frequency family member takes child on outing						3.39	1.03
Frequency family member takes child to a museum						1.78	.87
Frequency of meals with two parents						4.21	1.86
Frequency of spankings in past week (R)						2.01	3.08
Interviewer Report Items:							
Mother conversed pleasantly with child at least twice			.74			.86	.35
Mother responded to child's questions, requests			.67			.77	.42
Mother's voice conveyed positive feeling about child			.58			.91	.28
Mother kissed, hugged, caressed child at least once			.41			.41	.49
All visible rooms were reasonably clean				.77		.91	.28
No potentially dangerous hazards in preshooler's range				.51		.90	.29
Home interior was dark or perceptually monotonous (R)				.45		.91	.28
All visible rooms were minimally cluttered				.39		.80	.40
Did not see mother slap or spank child					.77	.95	.22
Did not see mother restrict, shake, or grab child					.52	.93	.25
Mother introduced the interviewer to the child by name						.36	.48
Eigenvalues	3.41	1.98	1.80	1.61	1.45		
Percent of Variance	12.7	7.4	6.8	6.0	5.4		
Factor-Based Scales:							
Number of Items	8	2	4	4	2		
Cronbach's alpha	.69	.77	.69	.60	.59		

[a] All factor-item correlations .35 and higher are displayed. Factor-analytic solutions were estimated using weighted data, and specified principal axis factoring and oblique rotation. Due to listwise deletion, actual number of cases used in the factor analysis was 1,391. Factor labels are I, Cognitive Stimulation; II, Acceptance of Child Anger; III, Warm Response; IV, Good Physical Environment; V, No Observed Violence.

[b] Item statistics were calculated with weighted data. Using listwise deletion of cases, actual number of cases is 1,391.

Table 6. Correlations among Factors and Factor-Based Home Environment Scales for Pre-School Age Children[a]

FACTOR-BASED SCALES:	COGNITIVE STIMULATION	WARM RESPONSE	GOOD PHYSICAL ENVIRONMENT	ACCEPTANCE OF CHILD ANGER	NO OBSERVED VIOLENCE
COGNITIVE STIMULATION	1.00	.24	.17	.07	.01ns
WARM RESPONSE	.33	1.00	.18	-.01ns	.01ns
GOOD PHYSICAL ENVIRONMENT	.22	.22	1.00	.05	.03ns
ACCEPTANCE OF CHILD ANGER	.21	.09	.19	1.00	.06
NO OBSERVED VIOLENCE	-.07	-.03	.02	.08	1.00

[a]Correlations among the constructed factor-based scales are displayed above the diagonal; correlations among the true factors obtained from the factor solution are displayed below the diagonal.

Table 7. Evidence for Construct Validity of Home Environment Scales for Children Aged 3 to 5 Years, 11 Months: Correlations with Current Economic and Occupational Conditions, Family Background Characteristics, Child Characteristics, and Child Behavioral and Cognitive Assessments

FACTOR-BASED SCALES:	COGNITIVE STIMULATION	WARM RESPONSE	GOOD PHYSICAL ENVIRONMENT	COMPOSITE OF SCALES
Current Economic and Occupational Conditions				
Household Income	.30[a]	.13	.16	.31
Poverty Status (1=yes)	-.34	-.21	-.22	-.37
Mother's Marital Status (1=married)	.19	.15	.09	.21
Mother's Employment Status (1=employed)	.04	.08	.13	.10
If Mother is Employed:				
Mother's Hourly Rate of Pay	.17	.07	.10	.17
Mother's Occupational Status	.20	.10	.05	.19
Family Background Characteristics				
Mother's Educational Attainment	.19	.07	.10	.19
Mother's Cognitive Achievement	.42	.23	.22	.44
Mother's Minority Status (1=non-white)	-.31	-.17	-.10	-.30
Mother's Age at Child's Birth	.15	.11	.11	.18
If Mother is Married:				
Spouse's Educational Attainment	.30	.09	.19	.29
Child Characteristics				
Gender (1=male)	.03ns	.03ns	-.02ns	.03ns
Age in Months	.07	-.06	.02ns	.02ns
Birth Order	-.18	-.09	-.12	-.19
Child Cognitive and Behavioral Assessments[b]				
McCarthy Verbal Memory Subscale	.18	.16	.07	.20
Peabody Picture Vocabulary Test	.41	.28	.20	.45
PIAT Math Subscale	.30	.29	.10	.35
PIAT Reading Recognition Subscale	.32	.26	.21	.40
Externalizing Behavior Problems	-.17	-.05	-.12	-.15
Internalizing Behavior Problems	-.16	-.09	-.08	-.17
Behavioral Style:				
Dependent-Demanding	-.26	-.12	-.13	-.26
Shy	-.07	-.12	-.03ns	-.08
Compliant	.21	.12	.10	.23

[a] Correlations are calculated with weighted data, using pairwise deletion. All correlations are statistically significant at the .05 level or better, unless flagged with ns (not significant). Correlations using mother's hourly rate of pay and the Duncan measure of the status of her occupation are calculated for employed mothers only.

The mother's cognitive achievement is measured by the Armed Services Vocational Aptitude Battery, administered in 1980. All other measures are as reported in 1986.

[b] The PIAT subscales were administered only to children at least five years of age. Behavior Problems and Behavioral Style assessments are factor-based composites (see Parcel and Menaghan, 1988b; Menaghan and Parcel, 1988b). Behavior Problems assessments were made only for children 4 years of age and older; Behavioral Style assessments were completed for children aged two through six.

Table 8. Factor-Based School-Age Home Environment Scales: Factor Structures and Item Statistics.

ITEM CONTENT	FACTOR-ITEM CORRELATION[a]					MEAN[b]	S.D.
	I	II	III	IV	V		
Maternal Report Items:							
Frequency of time with dad	.89					4.03	1.44
Frequency of meals with two parents	.80					3.17	1.80
Frequency of time with dad outdoors	.76					2.77	1.65
Frequency child is expected to:							
make bed		.72				3.43	1.56
clean own room		.78				4.02	1.22
clean up after spills		.61				4.26	1.10
bathe self		.43				4.72	.74
pick up after self		.62				4.50	.90
Musical instrument in home for child						.31	.46
Family takes daily newspaper						.41	.49
Frequency family takes child to performance				.65		1.67	.86
Frequency family takes child to a museum				.62		1.93	.95
Child gets lessons				.36		.43	.50
Number of books child's own				.35	.37	3.66	.67
Family encourages child's hobbies				(.31)		.87	.33
Frequency that child reads for pleasure	•			(.32)		3.84	1.24
Frequency of reading stories to child				(.29)		3.66	1.43
Frequency whole family visits relatives/friends						3.77	1.30
Parent discusses TV shows with child						.83	.46
No harsh reprisal for verbal aggression against parents						.38	.49
Number times spank last week (we need to reverse this)						9.21	1.45
Interviewer Report Items							
Mother conversed pleasantly with child			.80			.75	.44
Mother answered child verbally			.72			.68	.47
Mother's voice conveyed positive feeling about child			.70			.83	.38
Mother encouraged child verbal contributions			.62			.64	.48
Mother introduced interviewer to child by name						.32	.47
Home interior not dark or perceptually monotonous					.46	.89	.32
All visible rooms were reasonably clean					.68	.91	.29
All visible rooms are minimally cluttered					.44	.79	.40
No potentially dangerous hazards in schoolager's range					(.34)	.69	.46
Eigenvalues	3.42	2.75	2.39	1.86	1.64		
Percent of Variance	11.4	9.2	8.0	6.2	5.5		
Factor-Based Scales:							
Inital Number of Items	3	5	4	4	4		
Initial Cronbach's alpha	.87	.76	.80	.53	.53		
Final Number of Items	3	5	4	7	5		
FInal Cronbach's alpha	.87	.76	.80	.59	.55		

[a] All factor-item correlations .35 and higher are displayed. Factor-analytic solu_____ were estimated using weighted data, and specified principal axis factoring and oblique rotation. Due to listwise deletion, actual number of cases used in the factor analysis was was 1,218. Factor labels are I, Paternal Involvement; II, Expectations of Self Care; III, Warm Response; IV, Enrichment Opportunities; V, Good Physical Environment.

[b] Item statistics were calculated with weighted data. Using listwise deletion of cases, actual number of cases is 1,391.

Table 9. Correlations among Factors and Factor-Based Scales for Elementary
Age Children[a]

FACTOR-BASED SCALES:	ENRICHMENT OPPORTUNITIES	WARM RESPONSE	GOOD PHYSICAL ENVIRONMENT	PATERNAL INVOLVEMENT	EXPECT SELFCARE
ENRICHMENT OPPORTUNITIES	1.00	.13	.35	.19	.14
WARM RESPONSE	.13	1.00	.21	.07	.00
GOOD PHYSICAL ENVIRONMENT	.20	.17	1.00	.17	.04
PATERNAL INVOLVEMENT	.27	.11	.22	1.00	.03
EXPECT SELF CARE	.09	.00	.09	-.01	1.00

[a]Correlations among the constructed factor-based scales are displayed above
the diagonal; correlations among the true factors obtained from the factor
solution are displayed below the diagonal.

Table 10. Evidence for Construct Validity of Home Environment Scales for Children Six years and Older: Correlations with Current Economic and Occupational Conditions, Family Background Characteristics, Child Characteristics, and Child Behavioral and Cognitive Assessments

	ENRICH. OPPORT.	WARM RESPONSE	GOOD PHYSICAL ENVIRONMENT	COMPOSITE
Current Economic and Occupational Conditions				
Household Income	.14	.04ns	.20	.19
Poverty Status (1=yes)	-.14	-.13	-.25	-.26
Mother's Marital Status (1=married)	.03ns	.08	.10	.10
Mother's Employment Status (1=employed)	.08	.04ns	.13	.13
If Mother is Employed:				
Mother's Hourly Rate of Pay	.14	-.08	.08	.05
Mother's Occupational Status	.16	.06	.05ns	.12
Family Background Characteristics				
Mother's Educational Attainment	.30	.07	.23	.29
Mother's Cognitive Achievement	.23	.15	.29	.32
Mother's Minority Status (1=non-white)	-.11	-.17	-.24	-.26
Mother's Age at Child's Birth	.13	.14	.18	.22
If Mother is Married:				
Spouse's Educational Attainment	.30	.13	.15	.27
Child Characteristics				
Gender (1=male)	-.02ns	.03ns	-.01ns	-.00ns
Age in Months	-.07	-.07	-.04ns	-.06
Birth Order	-.17	-.13	-.09	-.16
Child Cognitive and Behavioral Assessments[b]				
McCarthy Verbal Memory Subscale	.13	.10	.15	.17
Peabody Picture Vocabulary Test	.23	.18	.27	.33
PIAT Math Subscale	.19	.17	.22	.28
PIAT Reading Recognition Subscale	.17	.13	.19	.25
Externalizing Behavior Problems	-.19	-.00ns	-.09	-.12
Internalizing Behavior Problems	-.17	.01ns	-.09	-.12
Psychological Visits	.02ns	-.01ns	.01ns	.01ns
Behavioral Style:				
Dependent-Demanding	-.15	.03ns	-.21	-.16
Shy	-.08ns	-.11	-.06	-.12
Compliant	.14	-.07ns	.12	.09

[a] Correlations are calculated with weighted data, using pairwise deletion. All correlations are statistically significant at the .05 level or better, unless flagged with ns (not significant). Correlations using mother's hourly rate of pay and the Duncan measure of the status of her occupation are calculated for employed mothers only.

The mother's cognitive achievement is measured by the Armed Services Vocational-Aptitude Battery, administered in 1980. All other measures are as reported in 1986.

[b] The cognitive and behavioral assessments varied by child age. The assessments shown were made for all children 6 and older except for the following: Behavioral Styles were only assessed for children below age 7.

Table 11. Evidence for Construct Validity of Home Environment Scales for Children Six years and Older: Correlations with Current Economic and Occupational Conditions, Family Background Characteristics, Child Characteristics, and Child Behavioral and Cognitive Assessments

	EXPECT SELF-CARE	PATERNAL INVOLVE TOTAL	PATERNAL INVOLVE MARRIED	PATERNAL INVOLVE UNMARRIED
Current Economic and Occupational Conditions				
Household Income	.06	.30	-.01ns	.09
Poverty Status (1=yes)	-.05	-.38	-.07ns	-.09
Mother's Marital Status (1=married)	.03ns	.60	-	-
Mother's Employment Status (1=employed)	.04ns	.14	.10	.09
If Mother is Employed:				
Mother's Hourly Rate of Pay	.10	.02	.13	.01ns
Mother's Occupational Status	.05ns	.01ns	.01ns	-.01ns
Family Background Characteristics				
Mother's Educational Attainment	-.01ns	.02ns	-.02ns	.05ns
Mother's Cognitive Achievement	.06	.23	.03ns	.19
Mother's Minority Status (1=non-white)	.05	-.35	-.17	-.20
Mother's Age at Child's Birth	-.13	.24	-.05ns	.11
If Mother is Married:				
Spouse's Educational Attainment	.00ns	.01ns	.01ns	-
Child Characteristics				
Gender (1=male)	-.14	.03ns	.11	.04ns
Age in Months	.24	-.16	-.14	-.13
Birth Order	-.04ns	-.02ns	-.02ns	-.04ns
Child Cognitive and Behavioral Assessments[b]				
McCarthy Verbal Memory Subscale	.08	-.03	-.03ns	.05ns
Peabody Picture Vocabulary Test	-.04ns	.17	.05ns	.11
PIAT Math Subscale	.04ns	.12	.08	.08
PIAT Reading Recognition Subscale	.05	.05	-.03ns	.02ns
Externalizing Behavior Problems	-.01ns	-.14	-.05ns	-.12
Internalizing Behavior Problems	-.03ns	-.15	-.07	-.13
Psychological Visits	.03ns	.04ns	.06	.03ns
Behavioral Style:				
Dependent-Demanding	-.03ns	-.20	-.10	-.07ns
Shy	-.14	-.01ns	-.06ns	-.05ns
Compliant	.21	.13	.06ns	.04ns

[a] Correlations are calculated with weighted data, using pairwise deletion. All correlations are statistically significant at the .05 level or better, unless flagged with ns (not significant). Correlations using mother's hourly rate of pay and the Duncan measure of the status of her occupation are calculated for employed mothers only.

The mother's cognitive achievement is measured by the Armed Services Vocational Aptitude Battery, administered in 1980. All other measures are as reported in 1986.

[b] The cognitive and behavioral assessments varied by child age. The assessments shown were made for all children 6 and older except for the following: Behavioral Styles were only assessed for children below age 7.