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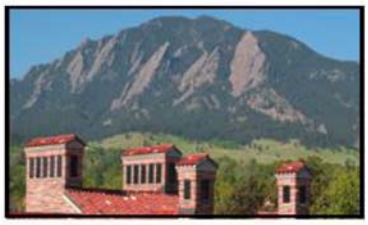

WORKING PAPER

Investigating the Life Situations and Development of Teenage Mothers' Children: Evidence from the ECLS-B

Stefanie Mollborn
Jeff A. Dennis

August 2010

Health and Society Program HS2010-01

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Stefanie Mollborn[a]
Jeff A. Dennis[b]
University of Colorado at Boulder

[a] Faculty, Health and Society Program, Institute of Behavioral Science, and Assistant Professor of Sociology. 483 UCB, Boulder, CO 80309-0483; 303-735-3796; mollborn@colorado.edu.

[b] Graduate Research Assistant, Health and Society Program, Institute of Behavioral Science. 483 UCB, Boulder, CO 80309-0483; 303-735-3796; jeffrey.dennis@colorado.edu.

* This research is based on work supported by grants from the Council on Research and Creative Work at the University of Colorado at Boulder and from the Department of Health and Human Services, Office of Public Health Service (#1 APRPA006015-01-00). An earlier version was presented at the Population Association of America 2008 annual meeting. Direct correspondence to Stefanie Mollborn, Sociology and Institute of Behavioral Science, 483 UCB, Boulder, CO 80309-0483. E-mail: mollborn@colorado.edu.

Abstract

The Early Childhood Longitudinal Study-Birth Cohort of 2001 represents a unique opportunity to examine the life situations of teenage mothers and their young children in a nationally representative sample. Descriptive and multivariate regression analyses compare teenage mothers and their children to older mothers and their children, examine variation among teenage mothers and their children, and estimate associations between household structures and mothers' work and school involvement in infancy, and children's health and development at age 2. Results show that compared to children of adult mothers, teenage mothers' children are disadvantaged across many domains. Their home environments have some greater risks, and their mothers' parenting behaviors are not rated as favorably. Many health and developmental measures at age 2 are compromised for teenage mothers' children. The cognitive advantage of living in a two-biological-parent nuclear household over a single-mother household is present for Latino, African American, and White children. The relationship between having a working mother and children's outcomes, however, depends on both the outcome considered and the child's race: Paid work is associated with higher behavior scores for African American children, but lower odds of very good or excellent parent-reported health for White children. Many everyday experiences that are associated with disadvantaged outcomes are quite prevalent among teenage mothers' children, identifying useful targets for policy interventions. Findings suggest that effective social programs implemented soon after birth might reduce the early developmental disadvantages of many children of teenage mothers.

Investigating the Life Situations and Development of Teenage Mothers' Children: Evidence from the ECLS-B

Despite recent decreases, the United States still has very high rates of teenage childbearing compared to other industrialized countries, and recent data show that births to teenagers are on the rise again (Hamilton, Martin, & Ventura, 2009). Reducing teenage childbearing and its negative consequences for mothers and children are two important social policy goals in the U.S. today (Furstenberg, 2003). Most previous research agrees that the children of teenage mothers are developmentally disadvantaged, with substantially worse outcomes in their preschool years than children of older mothers in areas such as cognitive, language, physical, and social development (Luster, Bates, Fitzgerald, Vandenbelt, & Key, 2000). However, much of the literature on the outcomes of teenage mothers and their children reflects biases from public discourse and media portrayals by focusing only on specific subpopulations of teenagers and children (particularly racial/ethnic minorities living in urban areas) and by investigating psychological and individual-level influences without sufficiently attending to socioeconomic and structural factors. Most studies that do include large national samples and social structural factors rely on older data (Geronimus & Korenman, 1993; Levine, Pollack, & Comfort, 2001; Moore & Snyder, 1991; Turley, 2003).

There is a need for national-level research that uses recent quantitative data to describe the life situations and development of teenage mothers and their young children in the United States, and our study targets this gap. A descriptive approach is vital to research on teenage motherhood because it provides a more comprehensive picture of who teenage mothers are and allows us to understand the diversity of circumstances in which they live. Our study then goes a step farther, estimating associations between prevalent life situations in infancy and children's health and development at age 2 in multivariate analyses. We address two primary research questions. First, how do the life situations and development of children of teenage mothers compare to those of children born to all adult mothers and to adult mothers who were teenagers at their first birth? Second, how are prevalent everyday experiences associated with particularly successful or compromised early cognitive and behavioral development among teenage mothers' children? Identifying prevalent factors that are associated with developmental risk can help policies target vulnerable populations of children who have teenage mothers. The recently released Early Childhood Longitudinal Study-Birth Cohort (ECLS-B) is exceptional for answering these research questions because it is the first nationally representative survey in the U.S. to track children from birth through kindergarten (U.S. Department of Education,

2007). The survey includes a wide variety of household-level and individual-level measures, as well as direct evaluations of both parents and children using highly respected assessment tools. It is one of the few national surveys with a large enough subsample of teenage mothers to allow meaningful comparisons of subgroups among teenage mothers.

The ECLS-B breaks new ground in its thorough assessments of the infant and toddler period. The first years of a child's life are a time of rapid physical, emotional, social, and cognitive growth that lays the groundwork for future development (Chase-Lansdale, Gordon, Brooks-Gunn, & Klebanov, 1997). Cognitive, behavioral, and verbal development measured in early childhood influence the success of children's transitions to formal schooling (Baydar, Brooks-Gunn, & Furstenberg, 1993; Duncan, Brooks-Gunn, & Klebanov, 1994). This success in turn predicts later measures of academic achievement, high school completion, and educational attainment (Luster, Bates, Vandenbelt, & Nievar, 2004). Despite its importance in determining individuals' future socioeconomic trajectories, less is known about children's development in these early years than in later periods. Most previous research agrees that the children of teenage mothers have substantially worse developmental outcomes in their preschool years than children of older mothers (Luster et al., 2000), but the exact causes of these differences are debated.

Scholars have assessed and debated a variety of reasons why teenage mothers' children may fare worse in life. Suggested causes include biological factors associated with young maternal age, developmental immaturity in young mothers, negative interpersonal and institutional sanctions attached to violating social norms against teenage childbearing, the selection of disadvantaged girls into early motherhood, and continued disadvantage related to becoming a teenage mother (Chen *et al.*, 2007; Geronimus, Korenman, & Hillemeier, 1994; Marini, 1984; Turley, 2003). The former reasons imply a causal relationship between young maternal age and child outcomes, while the last two suggest that the social disadvantage that is associated with young maternal age accounts for this association. Some recent analyses support causal explanations (Levine et al., 2001), but others suggest that the relationship between young maternal age and at least some child outcomes is not causal (Levine et al., 2001; Turley, 2003).

We examine background characteristics, socioeconomic factors, home environments, and parenting behaviors that may differ between teenage and adult mothers. We also investigate several child assessments measured from birth to 2 years old, including health, behavior, and cognitive development. Analyses compare teenage (i.e., under age 20 at the study child's birth) mothers to all adult (i.e., age 20 or older at the study child's

birth) mothers, as well as to mothers who were adult at the study child's birth but were teenagers when they first gave birth. This latter group provides an interesting comparison: If the development of prior teenage mothers' current children is compromised compared to the third group, it cannot be due to developmental, biological, or age-normative differences caused by the mother's young age. Some scholars suggest these as important reasons why teenage mothers' children fare worse, but many social scientists contend that it is primarily the array of disadvantages faced by teenage mothers (both with their first and subsequent children) that leads to compromised developmental outcomes. Both preexisting disadvantage prior to becoming a teenage mother and additional disadvantage caused by early childbearing are likely to contribute to the disadvantage that children of current or prior teen mothers face. Analyzing the comparison group of prior teenage mothers can begin to adjudicate between these sets of explanations.

Relative to other countries, U.S. teenage childbearing rates are high for Latinos and non-Latino Blacks, Whites, and Native Americans (Hamilton et al., 2009). Our analyses of children of teenage mothers are sensitive to potential differences by race and ethnicity. Focusing on each of the first three of these groups because of available sample sizes, we identify children's most prevalent everyday experiences in terms of household composition and mothers' work and school involvement. Because of racial/ethnic differences in factors such as nonmarital birth (Hamilton et al., 2009), we expect that children's most common situations will differ by their race/ethnicity. We also estimate the degree to which these experiences from infancy are associated with children's health, behavior, and cognitive development at age 2. These relationships have interesting implications for policy. For example, the 1996 "welfare reform" instituted restrictions on the receipt of cash assistance that require underage mothers to live with a parent or guardian and attend secondary school until receiving a diploma or GED (Moffitt, 2003). Are these measures associated with short-term developmental gains for children? Or is it more beneficial for children of teenage mothers to live with two biological parents and have a stay-at-home mother, as traditional norms would prescribe? Do the answers to these questions differ for children from different racial or ethnic backgrounds? Our multivariate analyses address these issues.

Methods

Data

The Early Childhood Longitudinal Study-Birth Cohort followed a sample of children born in 2001 from infancy through the start of kindergarten (U.S. Department of Education, 2007). It is the first U.S. nationally

representative study to track children from infancy through kindergarten, through interviews with a primary parent and direct assessments of the child. Investigators selected the sample using a clustered, list frame sampling design based on births registered in the National Center for Health Statistics vital statistics system. Births were sampled from 96 core primary sampling units, which were counties and county groups. Children whose mothers were younger than 15 years old at the birth were excluded because of state confidentiality and sensitivity concerns, so the data are not representative of children of very young mothers.

This study uses data from the first two waves of the ECLS-B survey, collected when the children were about 9 months and 2 years old. Trained interviewers conducted personal interviews with the child's primary parent (overwhelmingly the mother), as well as direct observations of the primary parent and the child. This study uses both of these data sources to paint a descriptive picture of the life situations of mothers and their children. Weighted response rates for the parent interview were 74% and 93% at Waves 1 and 2, respectively. Replication weights are used to make the analyses representative of children born in the United States in 2001. We restrict our analyses to children who were assessed at both waves and whose biological mothers were interviewed as the primary parent at both waves. After these restrictions, about 950 children had a mother who was younger than age 20 at their birth.[1] About 900 children of teenage mothers are included in the multivariate models, and models split by racial/ethnic group (Hispanic and non-Hispanic White and Black) include about 250 children per group. Approximately another 1,400 children were born to an adult mother who was a teenager at her first birth, forming a natural comparison group for some analyses. About 5,650 children had a mother who was 20 or older at her first birth.

Variables

Teenage childbearing. Unless otherwise indicated, all measures are based on maternal reports from Wave 1, with Wave 2 reports filling in missing data when appropriate. Children are coded as having a teenage mother if their biological mother was younger than age 20 at their birth. If birth certificate information was missing, mothers' age reports were used. Prior teenage mothers are identified as being younger than 20 at their first child's birth, but not at the study child's birth.

Background measures. A set of indicator variables constructed by ECLS-B measures children's race/ethnicity. The mother's parents' educational attainment is reported in years. Based on mothers' reports, a variable indicates whether the mother had a teenage parent, and another indicates whether the mother's family

[1] Because of ECLS-B confidentiality restrictions, all unweighted Ns are rounded to the nearest 50.

received welfare when she was between the ages of 5 and 16. A measure of pregnancy intendedness was coded as 1 if the mother wanted the baby at the time she became pregnant, if it came at the right time or came later than desired; and 0 if the mother did not want the baby, was indifferent, or the baby came sooner than she desired. A dichotomous measure of the father's readiness to have a child is based on the mother's retrospective report. Based on mothers' reports, a variable indicated whether prenatal care started in the second trimester or later versus the first trimester. Finally, mothers self-reported their health as excellent, very good, or good (1) versus fair or poor (0).

Household resources. Household socioeconomic status quintiles are ECLS-B constructed based on the mother's and resident partner's education and occupational prestige and household income. A measure of government benefits (ranging from 0-4) counts whether the household received WIC, food stamps, Medicaid, or TANF/welfare since the child's birth. Another variable is coded as 1 if the parents and child have free or subsidized housing (living with family and friends and paying part or none of the housing costs, or exchanging services for housing) and 0 if they pay for their own housing. An ECLS-B constructed measure, based on Department of Food and Agriculture guidelines, indicates if the child's household is food secure or food insecure with or without hunger. Household structures are coded as one of the following: single mothers living alone, with at least one grandparent, or with at least one other adult; both biological parents living alone, with at least one grandparent, or with at least one other adult; and mother living with a partner other than the biological father. Child care is measured using total hours per week in care (top coded at 60), and an indicator of whether the child receives any care from a relative. The mother's school enrollment and paid work are both measured at Wave 2. School enrollment is full-time, part-time, or none; paid work is $\geq$20 hours per week, 1-19 hours, or none.

Home environment. Mothers report their marital status at Wave 1, coded as married or not. ECLS-B constructed a measure of primary household language, coded into English, Spanish, or other. Breakfasts and dinners eaten together per week as a family range from 0 to 14 at Wave 2. Also at Wave 2, a measure of the child's daily hours of television was constructed from maternal reports on weekdays and weekends (0-10 range). A Wave 2 variable indicates whether someone smokes inside the house.

Parenting. A measure of time spent with the child is the sum of the mother's reports of how often in a typical week she takes the child on errands and reads books to, tells stories to, and sings songs with the child. Responses range from 0 to 12, coded from not at all, once or twice, 3 to 6 times, and every day. Similarly, reports of

how often she played with the child (played peekaboo, tickled, and played outside) were summed, ranging from 0 to 18 coded from not at all, rarely, a few times a month, a few times a week, every day, and more than once a day.

Four direct assessments measured the quality of the parent-child relationship and the mother's parenting behaviors: The Nursing Child Assessment Teaching Scale (NCATS) at Wave 1 and the Toddler Attachment Sort, Two Bags Task, and Parent Behavior Rating Scales at Wave 2. The NCATS is designed to assess the social, emotional, and cognitive growth fostered by the parent and the child's socioemotional communication with the parent.(Byrne & Keefe, 2003) NCATS includes a total score and separate parent and child scores. We used the parent score in this analysis.

The Toddler Attachment Sort – 45, a modification of the Attachment Q-Sort (Nord, Edwards, Andreassen, Green, & Wallner-Allen, 2006), assesses the child's attachment to the primary caregiver. Coders score the child on such behaviors as "seeks and enjoys being hugged" and "shows no fear, into everything." The child's attachment relationship with the focal caregiver is then classified as secure, insecure-avoidant, insecure-ambivalent, or disorganized (Nord et al., 2006). The Two Bags Task, which modifies the Three Bags Task used in prior research (Love *et al.*, 2002), is a problem-solving task involving both the child and the parent in a videotaped interaction. Parent and child play for 10 minutes with two sets of toys, a small set of dishes and a children's picture book. Coders rated the quality of both parent and child behaviors. Our study uses the parent score, which assesses factors such as mothers' emotional support, negative regard, and intellectual stimulation of their child (Nord et al., 2006). Finally, interviewers observed the mother's behavior during the assessment and coded whether or not she engaged in a variety of behaviors such as smacking, kissing/hugging, ensuring a safe play environment, responding verbally to the child, providing toys to the child, and interfering with the child's actions during the task (Nord et al., 2006). Seven items were coded as 1 for "negative" and 0 for "positive" parenting behaviors, and were then summed with higher scores indicating more unfavorable parenting behaviors. All other variables used in analyses are described in Table 1.

Child health and development. The child measures in this study focus on children's health and development at approximately 9 months and 2 years (Nord et al., 2006). Psychometric literature has established the advantages and limitations of various ways of measuring development at this age. The measures of child development in the ECLS-B data include 60 minutes of direct assessment, are based on widely used child development measures, and are intended to paint a comprehensive picture of a child's developmental progress.

Several health measures are included. An ECLS-B constructed measure based on birth certificate information indicates whether children were born with low birth weight (under 2500 grams) or very low birth weight (under 1500 grams). Maternal reports of the child's overall health at both waves were coded as excellent, very good, or good (1) versus fair or poor (0). The number of well-child visits is calculated as a ratio of the child's age in months at each wave to the total number of well-child visits (e.g., 50 equals one well-child visit every 2 months). A count at each wave of the number of times the child has seen a medical professional or visited a clinic or emergency room for an injury ranges from 0 to 3. The child's Body Mass Index (BMI) at Wave 2 is coded as low (<14.75 for boys and <14.4 for girls; CDC Growth Charts 5th percentile for age 2), normal, or high (>19.3 for boys and >19.1 for girls; CDC Growth Charts 95th percentile for age 2).

Three observation-based measures were used to measure child development in both waves of the ECLS-B: The Bayley Short Form – Research Edition (BSF-R) motor and mental scales, and the Child Behavior Rating Scale. The BSF-R was developed for the ECLS-B and is based on earlier versions of the Bayley Scales of Infant Development, which provide scores on mental and motor development for children up to age 3. The mental score measures children's expressive and receptive vocabulary, early communication skills, comprehension, and problem-solving skills (Nord et al., 2006). The motor score represents children's fine motor skills for tasks such as grasping, reaching, and manipulating small objects, and gross motor skills such as standing, sitting, walking, and balance. We use the t-scores for these measures, which standardize children's raw scores compared to others at the same age at assessment, in this study. Other variables calculate change in the raw mental and motor scores between Waves 1 and 2. When administering the BSF-R, interviewers also observed and rated child behaviors such as affect, attentiveness, and interest. We standardized and averaged the items, so a score of 0 is average behavior and each unit is one standard deviation. A final set of variables identifies children in the top and bottom weighted quartiles of mental and behavior scores at Wave 2.

Analysis Plan

Our study describes the life situations of teenage mothers and their children when the children were 9 months and 2 years old. Accounting for weights and complex survey design using Stata, three types of bivariate analyses include both means-based comparisons and other types of bivariate comparisons. The first set of analyses compares teenage mothers to other groups of mothers. Table 1 compares characteristics and assessments of children who have teenage mothers to those born to mothers aged 20 or older (referred to here as "adult mothers"). The adult

mothers are then further split between those who were under age 20 at first birth (but who were 20 or older at the birth of the focal child for this study) and those who were 20 or older at their first birth. In order to keep as much data as possible in each bivariate analysis, missing cases are deleted listwise within each individual bivariate comparison, resulting in varying Ns for each row of the tables. Further analyses examine variation among teenage mothers and their children. Table 2 displays teenage mothers' household structures and involvement in school and 20 hours or more per week of paid work, split by three predominant racial/ethnic categories. Table 3 introduces multivariate analyses that estimate the associations of these factors (teenage mothers' household structures and work and school involvement) with children's outcomes in three domains. Supplementary analyses split these multivariate analyses by race/ethnicity. We only report findings that are significant at $p<.05$ in the text, but the tables also include marginally significant ($p<.10$) findings.

Results

Comparing the Life Situations and Development of Children of Teen and Adult Mothers

Table 1 describes the life situations of mothers and their children in terms of mothers' backgrounds, the household's socioeconomic situation, home environment, the mother's parenting behaviors, and child assessments. The first two columns report means for teenage mothers (who were under age 20 at the study child's birth) and those aged 20 or older who are referred to as adult mothers, as well as bivariate tests for significant differences in means between these two groups.

TABLE 1 ABOUT HERE

Mothers' backgrounds. A number of factors illustrate that what we know from past research on older samples persists today: Teenage mothers' children are born into a background of social disadvantage. As expected based on vital statistics data (Danoff, Kemper, & Sherry, 1994), there are sizeable racial and ethnic differences between teenage and adult mothers' children, with overrepresentation of some disadvantaged minority groups among teenage mothers' children. 36% of teenage mothers' children are White, 25% are African American, and 33% are Hispanic, compared to 56%, 12%, and 24% of adult mothers' children, respectively. A higher proportion of adult mothers' children are Asian/Pacific Islander compared to teenage mothers' children.

Previous research has documented that teenage mothers typically come from socioeconomically disadvantaged backgrounds (Coley & Chase-Lansdale, 1998), a finding that is confirmed in this study's more recent survey. Teenage mothers' high school academic achievement is lower than adult mothers', and their mothers' and

fathers' average educational attainment is also lower. Teenage mothers were also more frequently born to a mother or father who was a teenager.

Another set of background factors concerns the parents' preparedness for the birth of the child. These variables identify an additional way in which teenage mothers' children were disadvantaged even before birth. Only 22% of teenage mothers reported being ready to have a child when they became pregnant, compared to 61% of adult mothers. Similarly, teenage mothers reported a lower level of readiness on the part of the father compared to adult mothers' reports. Perhaps not surprisingly given the low proportion of teenage mothers who were ready to have a child, 17% of teenage mothers did not get prenatal care in the first trimester of pregnancy if at all, compared to just 7% of adult mothers.

Socioeconomic situations. As expected based on past evidence, teenage mothers' disadvantaged backgrounds translate into socioeconomic disadvantage after the child's birth. One in every two teenage mothers is in the lowest 20% of the ECLS-B sample's distribution of socioeconomic status at Wave 1, compared to just one in six adult mothers. Eighty percent of teenage mothers fall in the lowest 40% of the overall sample's socioeconomic distribution, which speaks volumes about the diminished life chances of their children. Not surprisingly given their socioeconomic status, teenage mothers report receiving an average of more than two types of government benefits out of a possible four, compared to just over one for adult mothers.

The proportion of teenage mothers receiving government-subsidized or informally subsidized housing is double that of adult mothers, and 18% of teenage mothers report receiving welfare benefits compared to 7% of adult mothers. This significant difference in welfare receipt by maternal age is not as unexpected as is the low rate of welfare receipt among teenage mothers, a group that in public discourse is often assumed to be heavy welfare users. Future research should examine why so few teenage mothers take advantage of welfare benefits, especially when their children are young. Despite their heavier reliance on government support, teenage mothers' households report lower levels of food security, as well as higher levels of food insecurity with household members going hungry (4% of teenage mothers' households, compared to 2% of adult mothers').

Part of teenage mothers' lower household socioeconomic status is likely explained by their lower levels of labor force participation. Fifty-seven percent of teenage mothers were not working for pay when their children were 2 years old, compared to 44% of adult mothers. On the other hand, 27% of teenage mothers were enrolled in school full- or part-time, compared to just 11% of adult mothers, which may allow some teenage mothers eventually to

narrow their socioeconomic gap. Teenage mothers' children spend two more hours per week in child care at an average of 17 hours per week, and 44% of them receive care from a non-parent relative, compared to 27% of adult mothers' children.

There are also important differences in the composition of teenage and adult mothers' households. Teenage mothers are overrepresented in single-mother households and those with a biological mother and a non-biological-parent partner, both household types that tend to be linked to compromised child outcomes (Biblarz & Raftery, 1999; Heard, 2007). They are underrepresented among households with two biological parents living either alone or with at least one grandparent. See the discussion of Table 3 below for further information about teenage mothers' household structures, schooling, and paid work.

Home environment. Children with teenage mothers grow up in different home environments than their peers, sometimes in ways that have been linked to problematic child outcomes and sometimes in ways with less clear consequences. Strikingly, just one in four teenage mothers is married when her child is 9 months old, compared to 72% of adult mothers. Teenage mothers' children eat slightly fewer breakfasts and dinners together with their parents each week than adult mothers' children, they watch somewhat more television each day, and they more frequently live in homes where someone smokes indoors. Teenage mothers' households are as likely as adult moms' primarily to speak English. Among households with another primary language, teenage mothers' households are more likely than adult moms' to have Spanish as their primary language, but less likely to have another non-English primary language.

Parenting behaviors. A variety of measures generally echo previous research by reporting lower ratings of teenage mothers' parenting behaviors compared to adult mothers', which is likely to be at least partly a consequence of their social disadvantage (Coley & Chase-Lansdale, 1998). Teenage mothers spend slightly less time than adult mothers interacting with their child in enriching activities such as reading books or singing songs, though there is no significant difference in the time they spend playing with their child. Behavior ratings based on interviewer observations, including NCATS at Wave 1, and the Two Bags Task and interviewer behavior rating scale (where higher values indicate more negative behaviors) at Wave 2, all rate adult mothers' parenting behaviors more favorably than teenage mothers'. Attachment between mother and child is also more frequently compromised for teenage mothers: Just 53% of teenage mothers' children are securely attached compared to 62% of adult moms'

children, and 18% of teenage mothers' children evidence insecure-disorganized attachment compared to 13% of adult mothers' children.

Child development. It is not surprising that teenage mothers' children's development is frequently compromised compared to the children of adult mothers', given their higher levels of prior and ongoing social disadvantage, some negative factors in their home environments, and multiple unfavorable assessments of their parenting behaviors. Teenage mothers give birth to a higher proportion of children with low (<2500 grams) birth weight, which is associated with negative health and developmental outcomes in childhood (Boardman, Powers, Padilla, & Hummer, 2002). On the bright side, teenage mothers' children have been to slightly more well-baby visits as a ratio of their age than adult mothers' children. This finding may reflect either an increased frequency in these children's well-child visits because of their increased prevalence of health problems, or it might indicate the success of widespread health care programs that are designed to increase providers' contact with teenage mothers and their children.

The other positive comparison for teenage mothers' children is their higher ratings on the ECLS-B motor development scale at 9 months old. This motor advantage is wiped out by age 2 because of significantly slower developmental gains on average among these children. For ratings of both child behavioral and cognitive development, there are no significant differences between the groups of children at 9 months old, but at age 2 teenage mothers' children lag significantly behind their peers. This represents a difference of about 0.14 weighted standard deviations in behavior and nearly a quarter of a standard deviation in cognitive ratings at age 2. Research on school-aged children has found that developmental differences between teenage mothers' children and their peers start small and tend to widen over time (Brooks-Gunn & Furstenberg, 1986; Jaffee, Caspi, Moffitt, Belsky, & Silva, 2001), so we expect that this gap will widen in future waves of the survey as the children grow older. Because the expected developmental gap between teenage mothers' and adult mothers' children is nonexistent in infancy and small at age 2, early childhood is a promising time to intervene and try to reduce this disadvantage.

Comparing Children of Current and Former Teenage Mothers

The second pair of columns in Table 2 compares mothers who were teenagers at their first child's birth, but not at the birth of the current child in this study, with mothers who were at least 20 years old at their first birth. Significance tests also compare the former group to teenage mothers. These comparisons provide preliminary

evidence on the relative influence of developmental, biological, or age-normative explanations on the one hand, and social disadvantage explanations on the other, on differences in mothers' and children's life situations.

Overall, descriptive results provide some support for both sides, but favor social disadvantage explanations because prior teenage mothers and their children are frequently worse off than other adult moms and their children. Significant differences between current and prior teenage mothers are less frequent but occur with some regularity. Prior teenage mothers actually evidence greater disadvantage than current teenage mothers in a few instances, including their mothers' education levels, their households' food security, and the prevalence of single mothers living alone with their children. Similarly, prior teenage mothers' children have a few more negative measures than current teenage moms', such as less play time with their mothers, fewer well-baby visits as a ratio of their age, and lower cognitive and motor scores at 9 months old. This implies that becoming a teenage mother may have some lasting negative implications that instead of being reduced, may even increase for subsequent children who are born after the mother reaches her twenties. For many other significant differences, however, prior teenage mothers and their children fare a bit better than current teenage mothers. For example, prior teenage mothers and partners were more ready to have a baby, their households have higher levels of socioeconomic status, mothers are more likely to be married and living in nuclear two-biological-parent households, they rate slightly higher on the NCATS and Two Bags ratings of parenting behaviors, and their children are more frequently securely attached to their mother.

For most measures in Table 1, prior teenage mothers and their children are significantly different from other adult mothers and their children, in the same direction as the differences with teenage mothers in the first two columns. This indirectly supports the idea that social disadvantage explains a substantial amount of the negative effects of teenage motherhood. Prior teenage mothers come from more disadvantaged backgrounds than other adult mothers, live in households that are currently more socioeconomically disadvantaged and have less optimal home environments, mothers' parenting behavior ratings are lower, and many of their children's developmental measures are more compromised. Perhaps most importantly, their children's cognitive and behavior scores at age 2 are significantly lower than other adult mothers', but not significantly different than current teenage mothers'. Patterns for proportions of children ending up in the lowest quartile of cognitive and behavioral scores at age 2 are the same.

Teenage Mothers' Work/School Involvement and Household Structures

We now turn from comparing teenage mothers to others, to analyses that explore variation *among* teenage mothers and their children. Table 2 describes key facets of children's everyday experiences—teenage mothers'

household structures and involvement in school and paid work—when their children are about 9 months old. Teenage mothers are further broken up into the three most prevalent racial/ethnic groups based on children's race/ethnicity: Whites, Latino/as, and African Americans. Striking racial/ethnic differences in teenage mothers' household structures are evident. About 60% of both White and Hispanic children with teenage mothers are living with both biological parents, though a higher proportion of White children live in a nuclear family while a higher proportion of Hispanic children also live with other adults. In contrast, only 16% of African American children of teenage mothers live with both biological parents. Nearly 60% of Black children live with a single mother and other adults (such as a grandmother), and another 24% live with just a single mother. Only about one third of Hispanic and White children live in these two household types combined. In short, other adults more frequently live in Hispanic and African American children's households than White children's ($p<.05$; tests not shown), the biological father is more often coresident in Hispanic and White children's households than in African American children's ($p<.05$), and African American children more often live alone with a single mom than White and Hispanic children ($p<.05$). By the time the child is 2 years old, for all racial/ethnic groups the children's households are less likely to include other adults than at 9 months (results not shown).

TABLE 2 ABOUT HERE

Some racial/ethnic differences are also present in teenage mothers' involvement in education and paid work. The modal category for all three racial/ethnic groups is a nonworking, nonstudent mother who is presumably home with her infant, and this does not change at Wave 2 (not shown). African American children's mothers, however, are about as likely to be students or paid workers as stay-at-home mothers. White and Hispanic children's mothers are significantly less likely to be enrolled in school than African American children's moms ($p<.05$), but the proportion involved in paid work is not significantly different across racial/ethnic groups.

Table 2 also lists the combinations of household structure and school/work involvement that exceed 10% of teenage mothers within each racial/ethnic group. We can see that the traditionally normative household composed of a nuclear, two-biological-parent family with a stay-at-home mom is only the most prevalent for White children, and even then only 19% of White teenage mothers are captured in this category. The most prevalent categories among teenage mothers with Black children involve single mothers, with the top category of a single nonworking mother enrolled in school and living with other adults describing 21% of African American children's households. Mothers of Hispanic children display greater variety in their most prevalent categories. More than anything else, Table 2

shows that there is considerable diversity in teenage mothers' household structures and involvement with school and 20 hours/week or more of paid work, both between and within racial/ethnic groups. Policies intended to benefit teenage mothers' children should take into account this apparent lack of dominant "scripts" determining how teenage mothers organize their lives when they have young children.

The descriptive analyses have shown that teenage mothers and their children experience a diversity of household structures and work and school situations. But how are these important everyday experiences related to the health and development of teenage mothers' children? Table 3 reports multivariate analyses estimating the associations between these factors measured at Wave 1 and children's cognitive and behavioral assessments and parent-reported health measured at Wave 2. For each dependent variable, Model 1 reports these relationships adjusting only for age at assessment. Model 2 adds a variety of control variables representing demographic and socioeconomic background factors, including the parents' age, the child's race/ethnicity and gender, the household's primary language, the teenage mother's welfare history and family structure growing up, and the maternal grandmother's level of education.

TABLE 3 ABOUT HERE

The first columns in Table 3 predict children's cognitive scores at age 2. Mothers' work and school involvement are not significantly associated with mental scores, but several interesting relationships with household structure exist. After including a variety of background controls in Model 2, children in single-mother households score 2.6 points lower than children in two-biological-parent nuclear households. This cognitive disadvantage, which is equivalent to about one quarter of a weighted standard deviation, is similar whether or not children are living in extended-family households. Children living with both biological parents in extended households have a cognitive disadvantage compared to those in nuclear households in Model 1, but this difference is attributable to background factors controlled in Model 2. Supplemental analyses split these analyses by the three most numerous racial/ethnic groups (Hispanic and non-Hispanic Black and White). Children of single mothers have lower cognitive scores in each of these groups, though differences are not significant because of small subsample sizes.

Table 3 shows that with background factors controlled, children who lived with their single teenage mothers in extended households during infancy score 0.28 weighted standard deviations lower on behavior at age 2 than those who live with two biological parents in nuclear households. Post hoc significance tests show that these children's behavior scores are also significantly lower than those of children living with two biological parents in

extended households. The cognitive and behavioral disadvantages for children in this category are particularly important because single-mother extended households are the most prevalent, comprising 38 percent of the sample (see Table 2). Additionally, since welfare reform in 1996, underage teenage mothers have been encouraged to adopt this household type, by being required to live with a parent or guardian in order to receive TANF benefits. Supplemental analyses find that this relationship is the strongest for Hispanic children, who score nearly half a standard deviation lower on behavior when they are living in single-mother extended households compared to two-parent nuclear households ($p<.05$). Hispanic children in two-parent extended households also score higher than those living with single mothers, regardless of the presence of extended family ($p<.05$). For Black children, this household structure is associated with significantly lower behavior scores than living only with a single mother.

A number of race-specific significant findings regarding mothers' everyday activities should be noted. For African American children, having a mother who works but does not attend school is associated with behavior scores that are 0.36 standard deviations higher than among children whose mothers neither work nor attend school and 0.49 standard deviations higher than children with mothers who are in school and not working ($p<.05$). In contrast, Latino children whose mothers attend school but do not work have significantly higher behavior scores than those whose mothers are both workers and students.

There are no significant differences in parent-reported health by mothers' everyday activities or household structure in the overall sample, but there are two race-specific comparisons of note. For Hispanic children, living in an extended household with a single mother is associated with a significantly higher likelihood of reporting very good or excellent health than living in an extended household with two biological parents. Among White children, living with a single mother alone is associated with an 88 percent lower likelihood of very good or excellent parent-reported health than living in a two-parent nuclear household.[2] White children with working mothers have significantly lower odds of very good or excellent parent-reported health than either those whose mothers both work and attend school, or those whose mothers do neither.

By combining these multivariate findings with descriptive findings from Table 2, we can identify whether particularly prevalent household structures and maternal work/school involvement in a child's infancy are associated with better or worse development and health at age 2. In the overall sample, the second and third most prevalent combinations are associated with compromised cognitive and behavior scores, because of extended single-mother

[2] This percentage is calculated using the odds ratio, or exponentiated coefficient, based on Table 3.

household structures. Together, these combinations account for about one quarter of all teenage mothers and their children. For White children, the second most prevalent combination, accounting for 16 percent of all children, is problematic for parent-reported health because of mothers' status as paid workers. The two most prevalent categories for Black children, representing about a third of the sample, are problematic for cognitive scores because of the extended single-mother household structure. They are also less favorable than the third most prevalent combination children's behavior scores because of mothers' homemaker and student statuses as compared to paid work. The third and fourth most prevalent combinations for Latino children, which comprise about 21 percent of the sample, are problematic for cognitive scores and especially for behavior because of extended single-mother households. However, this same household structure is positively associated with health as compared to the extended two-parent household structure that is characteristic of the most prevalent combination for Hispanic children. In sum, a significant minority of teenage mothers' infants have everyday experiences, in terms of household structure and/or mothers' work and school involvement, that appear to put them at risk for compromised development as toddlers.

Discussion

This study reports descriptive analyses of national data on teenage mothers and their children from the Early Childhood Longitudinal Study-Birth Cohort. This survey is particularly helpful for understanding the life situations and development of teenage mothers' children because of its rich array of household-level and individual-level measures, its direct assessments of parents and children, and the recency of the data. We find that on average as compared to children with adult mothers, children of teenage mothers are more disadvantaged across a variety of domains. Some factors in these children's home environments may be problematic, and their mothers' parenting behaviors are not rated as favorably. Not surprisingly given these findings, many measures of health and development among teenage mothers' children are compromised compared to those of adult mothers' children. This developmental gap begins with lower birth weight, is largely nonexistent at 9 months of age, but is established by 2 years in the cognitive and behavioral domains. Despite this bad news, it is promising that the developmental gap is fairly small at this young age. When taken in combination with the fact that comparisons to prior teenage mothers show that young maternal age alone is not largely responsible for children's compromised outcomes, this suggests that effective social programs implemented soon after birth might be able to eliminate the early developmental and health disadvantages of many children of teenage mothers.

Descriptive analyses focusing only on children of teenage mothers find considerable diversity in key everyday experiences—household structures and mothers' school/work involvement—by race and ethnicity. Multivariate analyses predicting children's behavior, cognitive development, and health at age 2 find that the relationships between these factors and children's outcomes sometimes vary by race/ethnicity and sometimes do not. For example, the cognitive advantage of living in a two-biological-parent nuclear household over a single-mother household is present for children of all three races/ethnicities. The relationship between having a working mother and children's outcomes, however, depends on both the outcome considered and the child's race: Paid work is associated with higher behavior scores for African American children, but lower odds of very good or excellent parent-reported health for White children. Many of the everyday experiences that are associated with disadvantaged outcomes are quite prevalent among teenage mothers' children.

Rigorous evaluation of randomized experimental studies is needed before implementing widespread policies, but these findings point toward some potential routes that social programs might take to improve children's health, cognitive development, and behavior at age 2. For example, encouraging teenage mothers to continue their education or work for pay, even when the children are small, may improve children's long-term health and development both directly and indirectly, by raising socioeconomic status and increasing time spent in child care. In most cases, these activities are not associated with compromised development for their children in the short term. Other efforts such as income supports that increase the socioeconomic status of these children's households, or at the very least eliminate their food insecurity and hunger, may also pay off. Prenatal interventions to encourage early and frequent prenatal care, with a potential resulting increase in birth weight, may be beneficial for children's development. Any kind of support that facilitates teenage mothers' supportive parenting behaviors may also reduce the developmental gap between their children and adult mothers' children. Policies such as "welfare reform" that encourage young mothers to live with extended family rather than in a nuclear household with the child's father may be compromising children's early cognitive and behavioral development, so permitting a variety of household structures may be more fruitful. Policymakers should also be aware that children sometimes vary by race/ethnicity in the everyday situations that are associated with the highest outcomes. Prescriptive policy solutions that restrict teenage mothers' options to a narrow range of household structures or work/school involvement may not optimize development and health for all children.

These new, nationally representative descriptive statistics provide useful information about the experiences of teenage mothers and their young children in the U.S. today. Because this study focuses on early development, it provides new data to inform policymakers who are trying to close the early developmental gap between the children of teenage mothers and their peers before it widens further after children enter school. Importantly, this study provides a detailed description of not only the typical situations in which teenage mothers live but also highlights the diversity of characteristics that make up their lives. Teenage motherhood must be understood as a broad categorization that encompasses a wide array of backgrounds and circumstances. Understanding the diverse life situations faced by teenage mothers and their children, as well as the types of support that they lack and those that they already have, can inform the design of situationally appropriate intervention programs to improve their lives.

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Table 1. Wave 1 and 2 Household Characteristics and Child Outcomes of Teen, Prior Teen, and Adult Mothers

Variable	Teen mom	Adult mom	Sig.	Prior teen mom	Adult at first birth	Sig.
N (approximate)	950	7700		1400	5650	
Overall sample	0.11	0.89		0.18	0.71	
DEMOGRAPHICS/BACKGROUND						
Maternal age at birth	17.85	28.52	***	25.44 [a]	29.27	***
Child Race/Ethnicity						
White	0.36	0.56	***	0.38	0.62	***
Black	0.25	0.12	***	0.23	0.10	***
Hispanic	0.33	0.24	***	0.31	0.21	***
Asian/Pacific Islander	0.01	0.03	***	0.01	0.03	***
American Indian	0.01	0.004		0.01	0.003	***
Mixed Race	0.03	0.04	NS	0.06 [a]	0.04	*
Maternal grandmother's educ attainment	10.85	11.48	***	10.45 [a]	11.89	***
Maternal grandfather's educ attainment	10.51	11.83	***	10.33	12.32	***
Mother have a teen parent?	0.19	0.14	**	21.85	11.78	***
Ready for child when became pregnant?	0.22	0.61	***	0.43 [a]	0.66	***
Mom perspective of partner's readiness	0.72	0.87	***	0.77 [a]	0.89	***
Prenatal care start 2nd trimester or later	0.17	0.07	***	0.12	0.06	***
Good health - mother (W1)	0.90	0.93	*	0.88	0.95	***
SOCIOECONOMIC SITUATION						
Wave 1 SES Quintile						
First quintile	0.47	0.16	***	0.35 [a]	0.11	***
Second quintile	0.33	0.18	***	0.32	0.14	***
Third quintile	0.14	0.21	***	0.21 [a]	0.21	NS
Fourth quintile	0.05	0.22	***	0.10 [a]	0.26	***
Fifth quintile	0.004	0.22	***	0.01	0.29	***
Receive government benefits (0-4)	2.14	1.06	***	1.98 [a]	0.81	***
Receive welfare	0.18	0.07	***	0.15	0.05	***
Subsidized housing	0.26	0.12	***	0.21 [a]	0.09	***
Wave 1 Food Security						
Food secure	0.84	0.88	*	0.79 [a]	0.91	***
Food insecure w/ hunger	0.04	0.02		0.04	0.02	*
Wave 2 Hours Worked						
0 hours	0.57	0.44	***	0.49 [a]	0.42	***
1-19 hours	0.05	0.07	NS	0.03	0.08	***
20+ hours	0.38	0.50	***	0.48 [a]	0.50	NS
Wave 2 School Status						
Not in school	0.73	0.89	***	0.86 [a]	0.90	**
Part time school	0.11	0.07	**	0.08	0.06	NS
Full time school	0.16	0.04	***	0.05 [a]	0.04	*
Wave 1 Household Structure						
Single mom alone	0.11	0.08		0.19 [a]	0.06	***
Single mom w/ grandparent(s)	0.35	0.05	***	0.07 [a]	0.05	NS
Single mom w/ other adult(s)	0.04	0.02	*	0.03	0.01	*
Biological parents alone	0.28	0.73	***	0.58 [a]	0.77	***
Biological parents w/ grandparent(s)	0.14	0.06	***	0.06 [a]	0.05	NS
Biological parents w/ other adult(s)	0.06	0.05	NS	0.07	0.04	**
Biological mom, non-biological partner	0.03	0.01	**	0.01 [a]	0.01	NS
Wave 1 - Total hours child care (0-60)	17.32	15.06	**	14.59 [a]	15.11	NS
Receive care from a relative (W1)	0.44	0.27	***	0.26 [a]	0.26	NS

Table 1. (continued)

HOME ENVIRONMENT				
Married (W1)	0.24	0.72 ***	0.5 [a]	0.78 ***
Wave 1 Primary Household Language				
English	0.79	0.81 NS	0.82	0.84 NS
Spanish	0.18	0.13 **	0.16	0.11 **
Other Language	0.02	0.05 ***	0.02	0.05 ***
Breakfasts & dinners together/wk (0-14)	9.94	10.78 ***	10.35 [a]	10.92 ***
Average daily hours of TV	2.58	2.23 ***	2.52	2.15 ***
Someone smokes inside the house	0.14	0.08 ***	0.17	0.06 ***
MOTHER'S PARENTING BEHAVIORS				
Spend time with child (0-12)	7.93	8.35 ***	7.86	8.53 ***
Play with child (0-18)	15.12	14.97 NS	14.78 [a]	15.04 **
NCATS parent behavior rating (W1)	33.22	34.86 ***	33.85 [a]	35.14 ***
Two Bags behavior rating (1-7) (W2)	3.98	4.43 ***	4.13 [a]	4.53 ***
Parent behavior rating (0-7, low=good) (W2)	0.80	0.59 ***	0.80	0.53 ***
Wave 2 Mother-Child Attachment				
Secure	0.53	0.62 ***	0.59 [a]	0.64 *
Avoidant	0.18	0.16 NS	0.17	0.15 NS
Ambivalent	0.10	0.09 NS	0.09	0.09 NS
Disorganized	0.18	0.13 **	0.14	0.12 NS
CHILD'S HEALTH OUTCOMES				
Birth Weight				
Low birth weight (<2500 grams)	0.10	0.07 ***	0.08	0.07 *
Very low birth weight (<1500 grams)	0.02	0.01	0.01	0.01 NS
Good health - child (W1)	0.86	0.89	0.85	0.90 ***
Number of injuries (0-3) (W2)	0.17	0.18 NS	0.18	0.18 NS
Wave 2 Body Mass Index				
Low	0.05	0.05 NS	0.06	0.05 NS
High	0.19	0.16 NS	0.18	0.15
OTHER CHILD OUTCOMES				
Child behavior rating (W1)	0.08	0.07 NS	0.03	0.09 *
Child behavior rating (W2)	-0.06	0.08 ***	-0.01	0.11 ***
Standardized mental scale (W1)	50.01	49.92 NS	49.04 [a]	50.33 ***
Standardized mental scale (W2)	48.04	50.27 ***	47.72	51.15 ***
Standardized motor scale (W1)	51.92	49.81 ***	50.28 [a]	49.72 NS
Standardized motor scale (W2)	49.61	50.04 NS	49.87	50.18 NS
Change in raw mental scale W1-2	48.61	50.56 ***	48.30	51.45 ***
Change in raw motor score W1-2	24.18	25.63 **	25.17	25.83 NS
Bottom 25% mental score (W2)	0.30	0.24 **	0.32	0.21 ***
Top 25% mental score (W2)	0.16	0.26 ***	0.17	0.29 ***
Bottom 25% behavior rating (W2)	0.31	0.24 **	0.29	0.23 **
Top 25% behavior rating (W2)	0.20	0.26 **	0.23	0.27 *
Total well baby visits: age(months) ratio	0.37	0.34 ***	0.34 [a]	0.33 NS

Source: Early Childhood Longitudinal Study-Birth Cohort (2006)
p<.10, *p<.05, **p<.01, ***p<.001
[a]significantly different from teen mom at p<.05

Table 2. Prevalent Wave 1 Household Types and Work/School Activities Among Teenage Mothers, by Race/Ethnicity

Race/Ethnicity	Weighted Cross Tabulations	Single alone	Single w/ others	Bio parents alone	Bio parents w/ others	Bio mom, NB partner	Total	Most prevalent teenage mother household types (³ 10%)
Children of All Teenage Mothers	NW NS	3.57	**12.33**	**13.81**	9.97	1.45	41.13	1. Bio parents alone, mom not working, not in school
	NW SCH	1.74	**11.98**	2.69	3.14	0.02	19.55	2. Single mom w/ other adults, not working, not in school
	WRK NS	4.81	8.03	**10.45**	5.04	0.74	29.08	3. Single mom w/ other adults, in school, not working
	WRK SCH	0.53	5.91	1.28	1.84	0.68	10.24	4. Bio parents alone, mom working, not in school
	Total	10.64	38.25	28.23	19.99	2.89	100.00	
		Single alone	Single w/ others	Bio parents alone	Bio parents w/ others	Bio mom, NB partner	Total	
White Children of Teenage Mothers	NW NS	1.81	8.28	**18.97**	**10.78**	2.61	42.44	1. Bio parents alone, mom not working, not in school
	NW SCH	0.66	7.90	3.13	2.09	0.00	13.78	2. Bio parents alone, mom working, not in school
	WRK NS	3.55	6.44	**15.88**	5.12	1.73	32.71	3. Bio parents w/ other adults, not working, not in school
	WRK SCH	0.85	5.42	1.05	2.24	1.50	11.06	
	Total	6.87	28.04	39.03	20.22	5.84	100.00	
		Single alone	Single w/ others	Bio parents alone	Bio parents w/ others	Bio mom, NB partner	Total	
Black Children of Teenage Mothers	NW NS	7.91	**19.29**	2.94	1.81	0.55	32.50	1. Single mom w/ other adults, in school, not working
	NW SCH	4.81	**21.44**	1.96	1.28	0.00	29.48	2. Single mom w/ other adults, not working, not in school
	WRK NS	**10.31**	9.58	5.03	2.06	0.05	27.03	3. Single mom alone, working, not in school
	WRK SCH	0.88	9.11	1.00	0.00	0.00	10.99	
	Total	23.91	59.41	10.93	5.15	0.60	100.00	
		Single alone	Single w/ others	Bio parents alone	Bio parents w/ others	Bio mom, NB partner	Total	
Hispanic Children of Teenage Mothers	NW NS	1.79	**11.11**	**15.31**	**15.31**	0.39	43.91	1. Bio parents w/ other adults, not working, not in school
	NW SCH	0.67	**10.21**	2.58	5.32	0.05	18.83	1. Bio parents alone, not working, not in school
	WRK NS	2.43	8.55	8.97	7.58	0.24	27.77	3. Single mom w/ other adults, in school, not working
	WRK SCH	0.00	4.33	1.89	2.86	0.41	9.49	4. Single mom w/ other adults, in school, not working
	Total	4.89	34.20	28.75	31.06	1.10	100.00	

Source: Early Childhood Longitudinal Study-Birth Cohort (2006)

Legend:

NW NS - Mother works <20 hours/week, not in school
NW SCH - Mother works <20 hours/week, enrolled in school
WRK NS - Mother works ³20 hours/week, not in school
WRK SCH - Mother works ³20 hours/week, enrolled in school

Alone - No partner or other adults in household
W/ others - Grandparents or other adults also living in household
NB partner - Non-biological partner of mother living in household

Table 3. Linear and Binary Logistic Regression Models Predicting Child Outcomes at Age 2

	Cognitive Scores[a]		*Behavior Scores*[a]		*Parent-Reported Health*[b]	
Variable	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
Wave 2 assessment age (months)	1.90 ***	1.85 ***	0.05	0.05	-0.02	-0.04
Mother's daily activities (none)						
Work, no school	1.92 †	1.78 †	0.11	0.11	-0.10	-0.19
School, no work	1.62	1.04	0.17	0.15	-0.21	-0.45
Work and school	1.97	1.44	0.10	0.09	0.66	0.29
Household structure (bio. parents only)						
Single mother only	-2.45 *	-2.57 *	0.05	-0.01	-0.43	-0.39
Single with other adults	-1.95 †	-2.55 *	-0.18	-0.28 *	0.01	0.02
Bio. parents with other adults	-2.98 *	-1.62	0.01	0.04	-0.56	-0.39
Maternal age at birth		0.28		0.05		-0.01
Paternal age at birth (18-19 years)						
15-17		0.81		0.16		0.25
20-24		-0.48		0.01		-0.05
25 plus		-2.75 *		-0.24		-0.32
Missing information		-2.75		0.15		-0.80
Child's race/ethnicity (non-Hispanic White)						
Non-Hispanic Black		-1.90 †		0.06		-0.58
Hispanic		-1.27		0.14		-0.62
Asian/Pacific Islander		0.34		0.33		-0.34
American Indian		-5.28 **		-0.59 †		-0.46
Multiracial		-3.51 †		-0.11		-0.41
Female child (1=yes)		1.77 *		0.16 †		-0.19
Maternal welfare history (1=yes)		0.94		0.04		0.02
Lived with both parents until age 16 (1=yes)		0.35		0.14		-0.52 *
Primary language not English (1=yes)		-5.40 ***		-0.41 *		-0.20
Maternal grandmother's education (some college)						
Less than a high school degree		-2.54 *		-0.14		-0.87 *
High school degree		-1.26		-0.03		-0.40
Missing information		-3.60 *		-0.01		-1.22 *
Constant	79.27 ***	79.15 ***	-1.30	-2.05 †	2.64	5.01
R squared	0.09	0.21	0.02	0.07		

Notes: Source: Early Childhood Longitudinal Study-Birth Cohort, 2001-2005.

[a] Linear regression unstandardized coefficients [b] Binary logistic regression coefficients (not odds ratios)

Analyses account for sample design effects.

* p<.05 ** p<.01 *** p<.001; two-tailed tests