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Consequences of Teen Parents' Child Care Arrangements for Mothers and Children

Stefanie Mollborn
Casey Blalock

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Stefanie Mollborn

Casey Blalock

University of Colorado at Boulder

RUNNING HEAD: Child Care Among Teen Parents

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Abstract

Using the nationally representative Early Childhood Longitudinal Study-Birth Cohort (2001-2006; $N \approx 7900$), we examined child care arrangements among teen parents from birth through prekindergarten. Four latent classes of predominant child care arrangements at 9, 24, and 52 months of age emerged: “parental care,” “center care,” “paid home-based care,” and “free kin-based care.” More disadvantaged teen-parent families were overrepresented in the “parental care” class, and membership compared to some nonparental care classes predicted children’s lower reading, math, and behavior scores at age 4 and compromised maternal outcomes in socioeconomic and fertility domains. Nonparental care did not predict any negative maternal or child outcomes, and different care arrangements had different benefits for mothers and children. Both time spent in care and improved maternal outcomes contributed to children’s increased scores across domains. Future research should continue to evaluate interventions providing nonparental care for this marginalized population, but incorporate a variety of settings.

Keywords: Adolescent parents; early childhood; child care arrangements; child care; life course; latent class analysis

Consequences of Teen Parents' Child Care Arrangements for Mothers and Children

Improving the life outcomes of teen parents and their children is an important policy goal in the United States today, especially given that more than 1 in 6 teen girls is projected to give birth before turning 20 (Perper & Manlove, 2009). One policy measure that seems promising for simultaneously improving the situations of young mothers and their children is nonparental child care. Care situations are an important arena of socialization during early childhood, a period of tremendous cognitive and socioemotional growth that influences later development (Campbell, Pungello, Miller-Johnson, Burchinal, & Ramey, 2001). In the first four years of life, developmental disparities between the children of teen parents and their peers take root and intensify (author citation, in press), and policy dollars invested in early childhood programs, such as child care, pay off handsomely in improved outcomes throughout the life course (Duncan, Ludwig, & Magnuson, 2007). Yet little is known about the nonparental care situations experienced by these children and their consequences. The benefits of local programs providing center-based care for teen mothers and their children are documented. But even in the broader child care literature, the implications of other common types, including home-based and kin-based care, are less clear. We used recent, nationally representative longitudinal data to investigate prevalent care arrangements among children of teen parents. Analyses also assessed the consequences of care, both among teen parents' children and their mothers and compared to others.

Understanding how child care arrangements influence the children of teen parents and their families is important for both theory and policy. In the United States, many assume that the best place for a young child to learn is at home with her mother, though mounting evidence disputes this (Belsky et al., 2004; Crosnoe, 2007; NICHD Early Child Care Research Network, 2002). Yet a life course theoretical perspective emphasizes that teen mothers are in a life stage in which education and career development are important goals. Echoing these ideas, public discourse suggests that the

best place for a teenage mother to be is at school or work, as evidenced by the debate around welfare reform and the resulting restrictions on underage mothers' activities (Schott, 2009). Hence, parenting teens often face a normative double bind in which they are seen as failed mothers if they use nonparental care, but they are seen as failed adults if they stay home instead of studying or working. By investigating which choices are best for young mothers and children, we aim to disentangle facts from stereotypes, informing policies and improving these families' outcomes.

We examined five types of parental and nonparental child care situations at three points in time, using latent class analyses to determine the prevalent types of care arrangements among teen-parent families throughout early childhood. We also investigated the cost and duration of care and observation-based quality ratings. Descriptive and multivariate analyses incorporated a wide variety of variables representing the characteristics of families who selected different care arrangements. Multivariate regressions examined how predominant care arrangements were associated with children's cognitive and behavioral development as they prepare for the transition to school. Similar analyses predicted changes in mothers' socioeconomic outcomes and subsequent childbearing. Finally, we assessed whether nonparental care situations had more positive consequences for teen parents' children and their mothers, whose development of human capital is important for the family's long-term socioeconomic success, compared to children of nonteen parents.

BACKGROUND

Nonparental care is common in early childhood in the United States, but its costs are typically high and types of care vary considerably in their advantages and disadvantages (Scott, London, & Hurst, 2005). In 2009, 60 percent of 3- to 5-year-olds were enrolled in preschool or kindergarten (Kids Count, 2010). Many children received other nonparental care, such as paid or unpaid care in a home. The average annual cost of full-time care ranged from \$3,550 to \$18,750 in 2009 (NACCRRA, 2010). Although some low-income families qualify for child care assistance, many

states have long waiting lists, and most states' programs have not improved since 2001 (Schulman & Blank, 2010). The high cost of child care and limited governmental assistance make it difficult for lower-income families, including the vast majority of teen parents, to obtain high-quality nonparental care. A lack of reliable, affordable child care has been identified as a key barrier to young families' socioeconomic success (Teitler, Reichman, & Neponmyaschy, 2004).

What do young parents do if center-based care is out of financial reach? Crosby, Gennetian, and Hudson (2005) found in the general population that families supported by generous child care assistance programs tended to choose center care, but if support was less comprehensive, families ended up in home-based care provided by kin or nonkin. Using the Fragile Families survey, Teitler and colleagues (2004) found that unmarried mothers with young children (many with low incomes and some of them teens) relied heavily on kin-based care, which was frequently more affordable but also more unstable and unreliable, and rarely used center care, which was often expensive. Besides saving costs, teen parents may rely disproportionately on kin-based care to compensate for their lower parenting quality (Contreras *et al.*, 1999; Gordon, Chase-Lansdale, & Brooks-Gunn, 2004) or because family members offer to help. Voran and Phillips (1993) found that younger teen mothers and those receiving less support from the baby's father were more likely to receive child care assistance from their mothers. But because of increases in women's labor force participation (England, Garcia-Beaulieu, & Ross, 2004), kin-based care is not always available. Brewster and Padavic (2002) found that African American families' assistance with child care has decreased over time. When family members are not available to provide child care, young parents (especially mothers) may have no option but to stay at home and provide care themselves, rather than engaging in the age-normative activities of attending school or working for pay.

Because of the wide range of parental and nonparental care options teen parents may rely on, and especially because these options may result in disparities in children's and mothers'

outcomes (see below), it is important to understand which types of child care arrangements are prevalent in this vulnerable population. Research on the broader population has found that the prevalence of different types of care and their consequences for children vary substantially by the child's age (Leibowitz, Waite, & Witsberger, 1988). Most literature has focused on the year or two preceding kindergarten rather than earlier child care, about which less is known. We aim to identify predominant sets of care arrangements throughout the first 4½ years of life. Thus, our first research question was: *What are the most prevalent care arrangements for children of teen parents in the United States from infancy through pre-kindergarten?* Although some studies have examined specific types of care at specific ages, to our knowledge this is the first study to examine care arrangements among teen parents' children in a nationally representative sample or across early childhood. We expect that parental and free kin-based care will be more prevalent in this population than center-based or paid home-based care because of the typically higher cost of the latter types.

To understand the implications of predominant care arrangements throughout early childhood and to inform policies that support nonparental care, it was also important to ask: *What are the characteristics of prevalent child care arrangements and the families who use them?* The literature cited above suggests that teen-parent families with greater resources may be able to select center-based and paid home-based care. In contrast, mothers who are neither students nor paid workers and families with low incomes and low levels of education may resort to the typically more affordable options of kin-based and parental care. We could not locate comparisons of the characteristics of different types of care (such as quality, provider-to-child ratio, cost, and hours spent in care) for teen-parent families.

It is important to consider the consequences of care arrangements in early childhood to inform future research and policy, so our third research question was: *Are child care arrangements related to the outcomes of teen parents' children and their mothers?* Such a relationship may have two possible causes.

First, the *selection* of families with different characteristics into different care arrangements may result in a spurious association between care arrangements and child and maternal outcomes. For example, bias may result from the selection of higher-income families or families with higher-quality parenting skills into higher-quality care settings (Belsky, et al., 2004). Our analyses adjust for these selection factors in an attempt to isolate the second possible cause of children's and mothers' outcomes: *child care* itself. We anticipate that both of these causes contribute to a positive relationship between nonparental care and child and maternal outcomes.

Many researchers have found that child care is an important arena of socialization that affects *children's development* (Belsky, et al., 2004; Crosnoe, 2007; NICHD Early Child Care Research Network, 2002). On one hand, time spent in child care is associated with behavior problems in the general population before and after starting kindergarten (Magnuson, 2007; NICHD Early Child Care Research Network, 2002). On the other hand, preschool or center care is associated with short-term cognitive gains (Crosnoe, 2007; Magnuson, 2007) that last until the transition to formal schooling and are translated into long-term educational advantages (Entwisle, Alexander, & Olson, 2004). Many poor and minority children, groups from which teen parents' children disproportionately come, benefit more from preschool than their more advantaged peers (Magnuson, 2007), although less is known about the effects of noncenter care arrangements. Because children's development changes rapidly during the first years of life, it is important not to assume that findings about the developmental effects of prekindergarten care apply universally.

In contrast to observational studies, research evaluating randomized interventions can better estimate the impact of care on children. Programs for teen parents often include center care (which is easier to randomize than other types) with other services, preventing researchers from isolating the effects of child care. For example, Campbell, Breitmayer, and Ramey (1986) found that a high-risk teenage mother program including center care, free health care, and transportation improved

preschool cognitive scores. Other interventions in populations including teen mothers that bundled child care with other services found cognitive and educational gains for children (Clewell, Brooks-Gun, and Benasich, 1989; Ramey et al., 2000) that persisted into young adulthood, including a lower likelihood of teen pregnancy (Campbell, Ramey, Pungello, Sparling, & Miller-Johnson, 2002).

Research on the consequences of *other* types of care for children of teen parents is sparse and focuses on specific subpopulations. Yoshikawa, Rosman and Hsueh (2001) studied teen mothers in a welfare program. They found that children from families with low levels of nonparental child care and maternal work and school involvement had lower school readiness scores than those in other groups, including a variety of child care situations. No known studies of teen-parent families have analyzed nationally representative samples or isolated the consequences of different types of care arrangements beyond maternal work and school involvement, so our research addresses these gaps. We expect that center care will improve cognitive scores among children of teen parents compared to parental care, but we do not have expectations about kin-based or home-based care.

Child care also has the potential to affect *maternal outcomes*, and socioeconomic and other improvements for mothers could translate into advantages for children. Research about the implications of child care for teen mothers' outcomes is more extensive than for those of children. A lack of nonparental care has been identified in qualitative research as a barrier to teenage mothers' educational attainment (SmithBattle, 2007). Kin-based care has been positively associated with young mothers' educational and employment outcomes (Gordon, *et al.*, 2004; Unger & Cooley, 1992), though other research has found decreased paid work involvement (Vorán & Phillips, 1993). Intervention programs for high-risk teenage mothers that included center care and other resources improved mothers' shorter-term outcomes of high school attendance and grade point averages, high school completion, and postsecondary enrollment and longer-term educational attainment, employment, and financial independence (Campbell *et al.*, 1986, 2002; Crean, Hightower, & Allan,

2001; Williams & Sadler, 2001; see Clewell *et al.*, 1989 for a review). Access to center care was also associated with a decrease in teen mothers' likelihood of experiencing repeat childbirths (Sadler et al., 2007; Williams & Sadler, 2001). Therefore, we expect nonparental care arrangements to predict improvements in mothers' socioeconomic outcomes and reduced subsequent childbearing.

Because they tend to come from low-income and minority populations for whom nonparental care is disproportionately beneficial, and because teenagers should pursue education or employment to improve later socioeconomic outcomes, mothers and children in teen-parent families may benefit more from nonparental care than their nonteen-parent families. Teenage mothers are in a life phase when the development of human capital (education and work experience) is crucial for long-term outcomes. Women of all ages experience economic "motherhood penalties" in the workplace (Correll, Benard, & Paik, 2007), but disruption to the accumulation of human capital may be particularly problematic in adolescence. For all these reasons, we expect that nonparental care arrangements will have significantly more positive consequences for maternal outcomes, and thereby potentially for child outcomes, in teen-parent families than in other families. Our fourth and final research question asks: *Are nonparental child care arrangements more positively related to outcomes among teenage parents' children and their mothers than among other families?* We have not located literature comparing the consequences of child care arrangements for teen-parent versus non-teen-parent families.

Teen parents' children clearly evidence developmental disparities. Using the same nationally representative survey analyzed in this study, (author citation, in press) found that children of teen parents experienced substantial disadvantages in cognitive and behavioral development and health. Their outcomes went from near convergence with same-age peers at 9 months to developmental deficits of two thirds of a standard deviation by 4½ years. If early child care predicts more positive outcomes for teen parents' children than for their peers, then policies that intervene between these two time points may be able to prevent developmental disparities from taking root.

In this study, we focused on children who have a teen parent of either gender, although most children who have a teen father also have a teen mother. Research using the same national survey has shown that having a teen father is associated with children's compromised development (author citation, 2011). Regardless of which parent was a teenager, we focused on maternal outcomes. The mother was almost always identified as the child's primary parent, and her fate and the child's are closely linked. Our child outcomes were measured in the fall before most children entered kindergarten and captured a variety of domains including reading, math, and behavior scores. Academic preparedness and behavior predict success in the transition to school, which strongly influences later educational outcomes (Entwisle, Alexander, & Olson, 2004). Maternal socioeconomic outcomes were measured using educational attainment, work status, and household income adjusted for household size, and we also analyzed repeat childbearing. We chose these outcomes because they have been linked to future socioeconomic success among teen mothers (Hofferth, 1987; Manlove, Mariner, & Papillo, 2004).

Control variables included a variety of factors we expected to influence selection into child care arrangements (maternal socioeconomic background, marital and socioeconomic status, and work and school involvement at the start of the measurement period; parental ages; and child age, race/ethnicity, and gender). Parenting quality and home environment, which could also complicate the relationship between child care arrangements and child outcomes, were also controlled. We controlled for each child and maternal outcome at the start of the observation period to capture change from the initial measurement of child care to the measurement of outcomes. Finally, because children's behavior and health can shape mothers' activities and children's care arrangements and subsequent outcomes (Coley, Ribar, & Votruba-Drzal, 2011; Crosnoe, 2006), we controlled for children's birth weight and their health and behavior at the start of the observation period.

METHOD

Data

The Early Childhood Longitudinal Study-Birth Cohort (ECLS-B) followed a nationally representative sample of about 10,600 children born in 2001 from infancy through early kindergarten (U.S. Department of Education, 2007; because of ECLS-B confidentiality requirements, all *Ns* are rounded to the nearest 50). It is the first nationally representative U.S. study to track children through this period of early life using parent interviews and direct assessments. Importantly, the ECLS-B included relatively large subsamples of children with a teen parent. The sample was drawn from all 2001 births registered in the National Center for Health Statistics vital statistics system based on a clustered, list frame sampling design. Children were sampled from 96 core primary sampling units (counties and county groups). Children whose mother was younger than 15 at their birth were excluded for confidentiality and sensitivity reasons. They are a small minority of teen mothers: The birth rate for ages 10-14 was 0.6 births per 1,000 teens in 2008, compared to 41.5 for ages 15-19 (Hamilton, et al., 2010).

This study used data from the first three waves of the survey, conducted when the children were about 9 months, 24 months, and 52 months old. The primary parent, almost always the biological mother, was interviewed in person. The weighted response rates for the parent interview were 74 percent, 93 percent, and 91 percent for Waves 1, 2, and 3. Attrition between Waves 1 and 3 was roughly comparable for teen (20 percent) and nonteen parents (16 percent). This study's primary analysis sample was restricted to children whose biological mothers participated in the interview at all three waves (reducing the full sample by about 500 cases) and who had child care information at all three waves and maternal age information (further reducing about 150 cases), resulting in about 8250 eligible cases in the full sample and 950 eligible cases in the teen-parent subsample of children who had at least one parent under age 20 at their birth.

We imputed missing values for all independent variables except race/ethnicity, gender, Wave 1 equivalents of child outcomes (all resulting in a reduction of 350 cases), and paternal age (for which we considered missing information to be substantively meaningful, so a “missing” category was included in analyses) using Stata’s *iv* multiple imputation package. The imputation equations included all independent variables that were to be imputed, as well as other independent variables not imputed (gender, race/ethnicity, and parental age). Most imputations occurred for parenting measures. We compared our models developed with this imputed sample to models excluding the 38 percent of cases missing one or more parenting characteristics, and results differed little. Outcome variables were not imputed, resulting in 7 percent of cases missing reading or math assessments and 0 percent missing behavior scores or maternal outcomes. Thus, our *main analysis samples* were approximately 7300 to 7350 children overall and 850 children of teen parents for reading and math analyses, and 7900 children overall and 900 children of teen parents for behavior analyses and maternal outcomes. Stata software accounted for complex survey design using replication weights and probability weights to make findings representative of U.S. children born in 2001.

Measures

Child care measures. The primary parent reported on the child’s nonparental care arrangements at each wave. The array of possible child care arrangements was quite complex, especially because of parents’ frequent use of multiple care arrangements (Morrissey, 2008; Scott, *et al.*, 2005). Considering only regular child care situations of at least five hours a week, we condensed information at each wave (at approximately 9, 24, and 52 months old) into five categories: *no nonparental care*, *center care only*, *center care with other nonparental care*, *no-cost care provided by a relative including combinations with paid home-based care*, and *paid home-based care only*. Descriptive analyses measured characteristics of children’s care situations at each wave, including total hours per week in any nonparental care, hours per week by type of child care, and costs per month by type of child care.

Finally, for a subsample of children, ECLS-B personnel conducted Wave 2 and 3 observations of the quality of children’s nonparental care arrangements.

Child outcomes. Table 1 reports descriptive statistics for these variables and others below. We examined three measures of cognitive and behavioral development at Wave 3 (about age 4½), drawn from in-person child assessments and parent interviews (see Snow et al., 2007 for more information about these and other measures). Children’s *reading scores* were calculated based on a 35-item test covering areas appropriate for pre-kindergarten learning such as phonological awareness, letter sound knowledge, letter recognition, print conventions, and word recognition. *Math scores* were calculated using a two-stage assessment routed after the first stage depending on the child’s score, involving number sense, counting, operations, geometry, pattern understanding, and measurement. Children’s *behavior* was represented by a standardized continuous variable, averaged from 24 items in which the parent reported how frequently the child exhibited specific behaviors, using a 5-point scale ranging from *never* to *very often* ($\alpha = 0.86$). The items were taken from the Preschool and Kindergarten Behavior Scales—Second Edition, the Social Skills Rating System, and the Family and Child Experiences Study, as well as questions developed for the ECLS-B. For example, parents were asked how often the child shares belongings or volunteers to help other children, how often the child is physically aggressive or acts impulsively, and how well the child pays attention.

INSERT TABLE 1 ABOUT HERE

Maternal outcomes. All maternal outcomes were measured at Wave 3. Socioeconomic outcomes included the mother’s educational attainment with highest degree attained coded into approximate years, the household’s income-to-needs ratio which calculated household income as a percentage of the 2001 federal poverty line (which adjusted for household size, coded as *0-50* percent of the federal poverty line, *51-100*, or *101-200* compared to *> 200*), and the mother’s paid work status (*full time* at 30 hours per week or more, *part time* at 1-29 hours, or *none*). Finally, based on

household rosters, we coded whether or not the mother had borne a subsequent child after the study child's birth.

Independent variables. Demographic variables included maternal (15-17 or 18-19 at the child's birth compared to ≥ 20) and paternal age (15-19 or 20-24 compared to ≥ 25), the child's race/ethnicity (*non-Hispanic Black*, *Hispanic*, or *other/multiracial* compared to *non-Hispanic White*), and the child's gender. Maternal background was represented by the maternal grandmother's educational attainment (< *high school degree*, *some college*, or *college degree* compared to *high school degree*) and the mother's marital status at birth (*married* versus *not married*). Several Wave 1 equivalents of Wave 3 maternal outcomes were controls: maternal educational attainment and paid work status and household income-to-needs ratio. Other Wave 1 socioeconomic measures included household food security (*insecure without hunger* or *insecure with hunger* versus *secure*) and maternal school enrollment (*part-* or *full-time* versus *none*).

Two Wave 1 and three Waves 2 measures of parenting quality and home environment also served as controls. The Wave 1 Nursing Child Assessment Teaching Scale (NCATS) total score provided a direct assessment of the primary parent's parenting skills and the child's responsiveness during a learning task (Byrne & Keefe, 2003). ECLS-B staff constructed parent scores for five scales (sensitivity, negative regard, intrusiveness, stimulation of cognitive development, and detachment), which we averaged into a scale from 1 to 7 ($\alpha = 0.64$). Interviewers' Wave 1 observations of the mother's behavior during the assessment coded a variety of behaviors such as slapping, showing affection, ensuring a safe play environment, responding verbally to the child, providing toys to the child, and interfering with the child's actions during the assessment. Eight items were coded as 0 for "negative" and 1 for "positive" parenting behaviors and were then averaged. The Wave 2 Two Bags Task involved parent and child in a videotaped play interaction. Our study used the parent rating, which assessed mothers' sensitivity, positive regard, and cognitive stimulation (Nord, *et al.*, 2006).

The Wave 2 home environment score counted 21 positive home environment factors relating to the daily activities of the child, such as watching television, visiting the library, or having family meals, with the score ranging from 0 to 21 ($\alpha = 0.72$). Finally, the child's attachment to the primary parent was assessed in Wave 2 using the Toddler Attachment Sort – 45, with the interviewer scoring the child on behaviors such as “seeks and enjoys being hugged” and “shows no fear, into everything” (coded as *insecure-avoidant*, *insecure-ambivalent*, or *disorganized* versus *secure*).

Three additional variables were included in analyses predicting Wave 3 child outcomes, as they were required for analyses of the age-sensitive raw math and reading scores. These measures were the child's age at Wave 3, the equivalent to the dependent variable from Wave 1 (directly assessed Wave 1 raw cognitive scores for math and reading, and the directly assessed Wave 1 Child Behavior Rating Scale for behavior), and the child's age in months at Wave 1. Finally, three variables addressed endogeneity. The child's birth weight was coded as low (<2500 g) versus normal, and her Wave 1 parent-reported general health was coded as *very good/excellent* compared to *good/fair/poor*. Child behavior at Wave 1 (see above) was included in all multivariate models.

Analysis Plan

The results section addresses each research question in turn, incorporating descriptive and multivariate analyses as appropriate. Because we were interested in identifying prevalent patterns of child care arrangements across early childhood, we conducted latent class analyses. Latent class analysis differs from factor analysis in that it uses dichotomous, not continuous, indicators and assumes that there are underlying discrete groups, or “classes,” of respondents. Using the 15 child care indicators (5 types of care arrangements at 3 waves), we identified 4 prevalent latent classes of child care arrangements. Each case was assigned a probability of membership in each class (similar to a factor loading), and population shares were calculated for each class for the teen and nonteen parent subsamples. After choosing the class with the highest probability of membership and

assigning it to each child, we calculated weighted means and bivariate significance tests comparing each of the classes on characteristics of families and child care situations, comparing teen parents' children to others. Next, we estimated multivariate multinomial logistic regression models predicting class membership on the basis of family characteristics, comparing teen parents' children to others.

The remainder of the analyses focused on the consequences of prevalent patterns of child care arrangements, rather than on their predictors. We first conducted regression models predicting teen parents' children's Wave 3 outcomes, then mothers' socioeconomic and childbearing outcomes, on the basis of child care latent class membership and controls. Supplemental analyses examined the extent to which time spent in nonparental care explained relationships between care arrangements and outcomes and to which positive associations of nonparental care with maternal outcomes explained children's outcomes. Care quality ratings were not included here because none existed for parental care and sample sizes were too small. The last analyses used the full sample, introducing interactions between latent class membership and teen parent status to assess whether consequences of nonparental care arrangements differed between teen and nonteen-parent families.

RESULTS

Prevalent Child Care Arrangements

Our first analysis goal was to classify predominant child care arrangements between infancy and preschool among children of teenage parents, so we conducted a latent class analysis using the `poLCA` function in R. We used a maximum iteration of 2000 and repeated the 4-group analysis with different starting values 100 times to assure a global maximum. Latent classes were created from 5 child care arrangements at each of 3 waves (see above) for three different samples: the full eligible sample ($N \approx 8250$), nonteen parents' children ($n \approx 7300$), and teen parents' children ($n \approx 950$). To determine the appropriate number of classes, we used two common fit measures, the Bayesian Information Criterion (BIC) and the Akaike Information Criterion (AIC), to compare across

different solutions ranging from 1 to 6 classes. Moreover, as the starting values of these analyses were randomly generated and the maximization process was determined by the starting values, we took the average AIC and BIC for 30 different trials to assure that results were not determined by the starting values.

Across the three different subsamples, the AIC was nearly identical, with solutions of 4 or more classes appearing roughly similar. Thus, we considered the 4-class solution to be the most parsimonious. Considering the BIC, the full sample and nonteen parent sample were nearly identical, with 4 or more classes having roughly the same BIC and the 4-class solution performing slightly better. For the teen parent sample, the BIC's best fit was a 3-class solution, followed by a 2 and 4-class solution. As described below, the 4-class solutions comprised similar groups across the teen and adult subsamples, so we adopted it for both empirical and theoretical reasons. Across waves, the four classes represented each of the major categories of care arrangements (parental care, center care, free kin-based care, and paid home-based care). For consistency, we used membership in the four classes derived from the full sample in our multivariate analyses. See Table 2 for posterior probabilities and predicted population shares.

INSERT TABLE 2 ABOUT HERE

Similar patterns of child care arrangements emerged for children of teen versus nonteen parents. Class 1, labeled "parental care," was composed primarily of children who were exclusively in parental care at 9 and 24 months and split between parental and center care (preschool) at 52 months. Class 2, labeled "paid home-based care," included children who most commonly were in this type of care at 9 and 24 months and were split between center care and center with other nonparental care at 52 months. Class 3, labeled "free kin-based care," included children who were primarily cared for by a relative at 9 and 24 months and split between center care and center with other nonparental care at 52 months. Class 4, labeled "center care," was comprised of children who

had a variety of arrangements in infancy and primarily received center care at 24 and 52 months. Two thirds of these children were exclusively in center care at 52 months, compared to less than half of children in the other classes. Not only were child care latent classes similar for the teen and nonteen parent samples, but the proportion of respondents in each was as well. For teen and nonteen parent samples, respectively, the four classes had the following population share: 39 and 49 percent for “parental care,” 21 and 23 percent for “paid home-based care,” 21 and 15 percent for “free kin-based care,” and 18 and 13 percent for “center care.” These analyses allowed us to address our first research question, which asked whether parental and free kin-based care would be more prevalent than center-based and paid home-based care among children of teenage parents. “Parental care” was indeed the most prevalent class among teen parents’ children. The “free kin-based care” class was the next most prevalent, but the “paid home-based care” class was equally prevalent. As expected because of its anticipated high cost, the “center care” class was relatively uncommon.

Characteristics of Child Care Arrangements

Our second research question addressed the characteristics of care arrangements, as well as those of families (described below). Table 3’s descriptive findings on child care characteristics represented each class, comparing teen and nonteen parent families. We highlight several findings here. First, teen-parent families in the “paid home-based care” class spent substantially more money on child care than teen parents at each wave (at Wave 3, an average of \$179 per month, versus \$48 to \$98 per month for the other classes). This was not true among nonteen-parent families, among whom costs (though much higher than among teen parents) were lower for the “paid home-based care” class than the “center care” class. Second, for both the teen and nonteen groups, Wave 3 costs were lower for the “free kin-based care” class compared to “center” and “paid home-based,” even though children spent a similar number of hours in nonparental child care. Third, ECLS-B’s Wave 2 ratings of child care quality were higher for teen-parent families in the “center care” class compared

to other classes. The quality rating of the “center care” class was as high for teen parents as for the various classes of nonteen parents, but the quality of teen parents’ “free kin-based care” class was significantly lower than among nonteen parents. Finally, the Wave 3 quality of nonparental care was higher in the “parental care” class than other classes for nonteen-parent families. In contrast, the “parental care” class had much lower Wave 3 quality ratings than any other class among teen parents. Taken together, these findings suggest that center care was the highest-quality option for teen-parent families, yet its average cost was low. Paid home-based and free kin-based care contrasted sharply in cost, but not in hours or quality. The relative advantages of specific care arrangements frequently differed for teen parents compared to others.

INSERT TABLE 3 ABOUT HERE

Predictors of Child Care Classes

In considering our second research question, we also anticipated that substantial selection processes would sort families into different patterns of child care arrangements. In particular, we expected that parental and kin-based care would be more prevalent among children whose mothers were not students or paid workers and among families with fewer socioeconomic resources. Table 1 presents descriptive statistics and bivariate significance tests for the four predominant latent classes of child care arrangements among children of teen parents. The table shows that children in the “parental care” class were indeed more disadvantaged than the other three classes on a variety of dimensions. The “parental care” class was overrepresented among children whose grandmothers’ educational attainment was less than a high school degree and whose mothers had fewer years of education, no school enrollment, and no paid work hours at Wave 1. Beyond socioeconomic disadvantage, other characteristics of families in the “parental care” class are important to note. This class was underrepresented among African Americans and children whose fathers were teenagers

and overrepresented among Whites. Children in the “free kin-based care” class were largely similar to other nonparental care classes, although the mother or father was more likely to be older.

Table 4 presents estimates from multinomial logistic regression analyses that predicted associations between family characteristics and membership in each of the other latent classes compared to the “parental care” class, for both teen and nonteen parent families. “Parental care” was the base outcome (reference category) because descriptive statistics showed a variety of clear differences between these families and others. All control variables shown in Table 1’s descriptive analyses (except Wave 1 cognitive scores) were included in these models, and all were measured at Wave 1 except as indicated.

INSERT TABLE 4 ABOUT HERE

The most consistent and important predictors of membership in each of the three nonparental care latent classes for both samples were mothers’ part- or full-time work compared to not working for pay and mothers’ full-time enrollment in school. For example, having a mother who worked part time compared to not working more than tripled a teen parent’s child’s odds of being in the “center care” class compared to “parental care,” full-time work raised these odds a bit more, and the mother’s full-time enrollment in school was associated with an eightfold increase in the odds of being in the “center care” class. Four other key findings among the teen parent subsample are worth noting. First, each additional year of maternal education at Wave 1 was associated with 30 percent and 44 percent higher odds of being in the “free kin-based care” and “center care” classes than the “parental care” class, respectively. Second, households experiencing food insecurity with hunger compared to food security had 80 percent lower odds of being in the “center care” class compared to “parental care.” Third, controlling for this selection of extremely resource-deprived households into parental care, households’ income-to-needs ratios (household income as a percentage of the federal poverty line, which adjusts for household size) were not associated with teen-parent

children's child care arrangements. Finally, as past research has suggested, parenting factors did not predict child care arrangements with two exceptions: Children receiving lower Wave 1 parenting quality as observed by the interviewer, but a more positive home environment, had higher odds of being in the "free kin-based care" class compared to the "parental care" class. Coresidence with grandparents or other relative might explain this apparent discrepancy.

In comparing the teen and nonteen parent samples, the parenting factors were again of interest. Children of nonteen parents with lower-quality home environments had lower odds of being in the three nonparental care classes, which contrasts with the relative lack of significance of parenting factors for teen parents' care arrangements. Children of nonteen parents who were in the three nonparental care classes had 41 percent to 60 percent higher odds of displaying disorganized rather than secure attachment to their primary parent compared to children in the "parental care" class, yet their mothers scored more highly on the Two Bags parenting task. In sum, while teen and nonteen parent families often selected into child care arrangements in similar ways, sorting in terms of parenting factors differed between the two groups.

Consequences for Children in Teen-Parent Families

Our third research question addressed the consequences of child care arrangements for mothers and children in teen-parent families. We expected that center care arrangements would be associated with increased cognitive and behavior scores among teen parents' children compared to parental care. Descriptive analyses in Table 1 show that children in the "parental care" class had significantly lower reading and math scores at 52 months compared to the overall teen-parent mean, children in the "paid home-based care" class had significantly higher reading scores than the mean, and children in the "center care" class had higher behavior scores. For each outcome, the difference in scores between the "parental care" class and the highest-scoring nonparental care class was about one third of a weighted standard deviation.

Table 4's findings discussed above illustrated that a meaningful analysis of the consequences of child care arrangements for children must account for the powerful selection processes that sort children into different care arrangements. Therefore, we estimated multivariate linear regression models predicting teen parents' children's reading, math, and behavior scores at Wave 3 by their latent class membership (see Table 5). Model 1 controlled for children's and parents' ages and the Wave 1 equivalent outcome. Model 2 introduced controls from Table 3 that might influence the selection of children into child care arrangements, including parenting factors. We found that for *reading* scores, the positive association between membership in the "free kin-based" and "center care" classes was explained by parenting and factors influencing the selection of teen parents' children into child care arrangements. With controls included, children in the "paid home-based care" class had reading scores that were 1.2 points, or 0.2 weighted standard deviations, higher than those in the "parental care" class. With controls included, children in nonparental care classes had *math* scores that were between 1 and 1.6 points, or about 0.2 standard deviations, higher than those in the "parental care" class ($p < 0.10$ for "free kin-based care"). The initial positive association ($p < 0.10$) between "free kin-based care" class membership and *behavior* was explained by controls, but behavior scores for children in the "center care" and "paid home-based care" ($p < 0.10$) classes were 0.2 to 0.3 standard deviations higher than the "parental care" class. Thus, especially for the "paid home-based care" class, our expectation of positive outcomes from nonparental care was often supported. Supplemental analyses introduced total hours of nonparental child care at each wave, finding that time in care explained all positive relationships between nonparental care and reading and math scores, but neither of the positive associations between nonparental care and behavior.

INSERT TABLE 5 ABOUT HERE

Consequences for Children and Mothers in Teen-Parent Families

Our third research question also asked whether nonparental care arrangements among children of teen parents would predict mothers' improved socioeconomic and parenting outcomes and a lower likelihood of subsequent childbearing. Descriptive analyses in Table 1 show that being in the "parental care" class was significantly associated with each of these outcomes as predicted. Table 6 reports multivariate regression analyses that predicted maternal outcomes while controlling for Table 4's factors that could influence the selection of teen-parent families into child care arrangements (parenting measures were excluded). The Wave 1 equivalent of each measure was controlled in each model except for subsequent childbearing (because Wave 1 was conducted at 9 months postpartum), and the Wave 3 equivalent was the outcome. Models predicting educational attainment and income-to-needs ratios were estimated using ordinary least squares regression models, subsequent childbearing was estimated using binary logistic regression, and part-time and full-time paid work versus none was estimated using multinomial logistic regression.

INSERT TABLE 6 ABOUT HERE

In these multivariate models, membership in the "paid home-based care" ($p < 0.10$) and "free kin-based care" classes predicted increases in educational attainment of 0.2 years (0.1 standard deviations) with a variety of selection factors controlled, compared to the "parental care" class. Membership in the "paid home-based care" and "center care" classes predicted household income gains of about 20 percent of the federal poverty line compared to "parental care." Membership in the "free kin-based care" class predicted lower odds of subsequent childbearing compared to being in the "parental care" class ($p < 0.10$), and mothers in the "center care" class had 39 percent lower odds of giving birth to another child. Membership in the "paid home-based care" and "free kin-based care" classes significantly predicted part-time compared to no paid work, with each more than doubling the odds of part-time work compared to the "parental care" class. Finally, the odds of

working full time at Wave 3 compared to not working for pay were between 3.2 and 4.5 times higher for mothers in the three nonparental care classes compared to “parental care.” Taken together, we frequently found that nonparental care was associated with more favorable maternal outcomes in the socioeconomic (especially employment) and fertility domains. Although nonparental care was consistently beneficial for mothers, the three classes were roughly equal in number of significant positive associations. Supplemental analyses found that hours of nonparental care explained most of the significant associations between nonparental care arrangements and maternal outcomes.

Did these positive associations between nonparental care and *maternal* outcomes explain why nonparental care was beneficial for *children*? The gains in socioeconomic measures and reduced fertility experienced by teen mothers in nonparental care classes might be a reason why teen parents’ children also benefitted from these care arrangements. Supplemental models (not shown) introduced the Wave 3 measures of each of the maternal outcomes into the child outcome models reported in Table 4, controlling for the Wave 1 measures. The positive associations of the “paid home-based care” class with reading scores and of the “center care” class with behavior scores were unchanged, but the other positive associations were partially explained (to $p < 0.10$) or in the case of the marginally significant relationship between the “kin-based care” class and math scores, fully explained. In combination with the finding that time spent in care explained the positive associations of nonparental care with children’s reading and math scores, we concluded that *both* duration of exposure to nonparental care and its advantages for mothers played a role in understanding why nonparental child care was associated with improved development among teen parents’ children.

Differences by Parental Age in the Benefits of Nonparental Care

Our fourth and final research question asked whether nonparental care arrangements would have significantly more positive associations with child and maternal outcomes among teen-parent families compared to nonteen-parent-families. To assess this hypothesis, we estimated multivariate

regression models predicting each of the child and maternal outcomes using the full sample. Models included child care classes and an indicator of whether the child was born to a teen parent, as well as interactions between these variables. The same controls were included in these models as in Tables 4 and 5 (respectively for each set of outcomes). For ease of interpretation, the results of the child outcome interaction models are shown in Figure 1. The figure displays predicted values of each outcome (predicted probabilities for subsequent childbearing and work status) for a hypothetical case with the teen parent subsample's average values for all variables except those being manipulated (child care class and teen parent status). Significance levels came from the regressions.

INSERT FIGURE 1 ABOUT HERE

For reading, math, and behavior scores, Figure 1 shows that membership in the “paid home-based care” class compared to the “parental care” class was disproportionately beneficial for children of teen parents. The “paid home-based care” class was not significantly associated with any outcome for children of nonteen parents compared to the “parental care” class, but the hypothetical child of a teen parent in this class had 1 point higher reading and 0.9 points higher math scores than the hypothetical nonteen parents' child. The “center care” and “free kin-based care” classes were associated with significantly higher math scores compared to “parental care” for all children, but their interactions with teen parent status were not significant. In contrast, membership in the “center care” class predicted 0.3 standard deviations higher behavior scores for children of teen parents compared to their peers.

Figure 1 reveals that across the three child outcomes, children of teen parents had lower scores for each outcome when they belonged to the “parental care” class compared to the three nonparental care classes, but the same was not true for children of nonteen parents. Another important finding to note is that the “paid home-based care” and “center care” classes consistently

predicted the highest scores of any class among teen parents' children. In contrast, the "paid home-based care" class usually had low scores for nonteen parents' children.

Supplemental models (not shown) analyzed interactions between child care classes and teen parent status when predicting *maternal outcomes*. Unlike for child outcomes, each of the domains analyzed did not find significant associations ($p < 0.05$) between child care arrangements and maternal outcomes for teen-parent families compared to others. Instead, membership in nonparental care classes predicted maternal outcomes similarly for all children. In sum, we found that nonparental care classes frequently predicted significantly more positive outcomes in teen-parent compared to nonteen-parent families compared to others for children, but not mothers.

DISCUSSION

This exploratory study capitalized on recent longitudinal data from the first 4½ years of childhood in a nationally representative U.S. sample to examine the characteristics and consequences of predominant child care arrangements across early childhood among teen parents' children and compared to other children. Latent class analyses identified four prevalent classes of child care arrangements at 9 months and 2 and 4½ years: "parental care," "center care," "free kin-based care," and "paid home-based care." These findings echo past research on broader samples finding that families with limited resources often avoid higher-cost nonparental care options in early childhood (Crosby, *et al.*, 2005; Teitler, *et al.*, 2004), resulting in a diversity of care settings in the population, and that many children migrate into center-based care settings in the prekindergarten year (Leibowitz, *et al.*, 1988). Analyses documented the selection of teen-parent families who were more likely to have successful outcomes into nonparental care. This echoed previous research from the general population suggesting that families with employed mothers and thereby some income worked to avoid having only parental care (Teitler, Reichman, & Neponmyaschy, 2004). After accounting for this selection, our study found that receiving various types of nonparental care was

associated with improved child and maternal outcomes across a variety of domains. These findings are consonant with literature on the effects of intervention programs for teen parents that include center-based child care (e.g., Campbell, et al., 2002; Clewell, et al., 1989; Ramey, et al., 2000), though less is known about other care settings. We found that both duration of exposure to care and improvements in maternal outcomes helped explain the positive relationships between nonparental care arrangements and children's outcomes. We could not identify particular types of nonparental care that were consistently associated with better outcomes than other types. Introducing care quality measures might have addressed this, but the subsample with available quality measures was too small to permit analysis by class.

It is important to note that although they fairly consistently predicted positive consequences for teen-parent families compared to “parental care,” the “center care,” “paid home-based care,” and “free kin-based care” classes frequently had different characteristics and different implications for teen-parent and nonteen-parent families. The “paid home-based care” class was associated with significantly more positive reading, math, and behavior scores among teen parents' children compared to nonteen parents' children. Similarly, the “center care” class predicted significantly higher behavior scores for teen parents' children compared to others.

Why was the “paid home-based care” class associated more positive outcomes than “parental care” among teen-parent families but not others? Our descriptive analyses found little difference in “paid home-based care” quality or time spent in care compared to other nonparental care arrangements among teen-parent families, and its quality was not significantly different than for nonteen-parent families in the same class. After ruling out the quality and duration of “paid home-based care,” we considered two alternative explanations. First, teen-parent families in the “paid home-based care” class spent substantially more money on child care than any other class, but the same was not true of nonteen-parent families. The higher cost did not appear to translate into higher

quality, but it may have captured unmeasured aspects of family resources: Teen-parent families who could afford to pay more might have passed other advantages to their children, resulting in observed positive associations with children's outcomes. Alternatively, the quality of care in the *comparison group*, "parental care," may have differed systematically between teen-parent and nonteen-parent families. Indeed, supplemental descriptive analyses found that Wave 2 and 3 Two Bags Task parenting quality was half a standard deviation lower ($p < 0.05$) for teen parents in the "parental care" class compared to nonteen parents in the same class.

The nationally representative data used in study was limited by its observational nature: We could establish time order through the use of longitudinal data, but could not establish causality because families selected into care settings instead of being randomized. Although we controlled for many factors influencing endogeneity (i.e., child and maternal outcomes affecting care arrangements) and selection in the multivariate models, unobserved factors may still have biased the findings. The lack of equivalent quality ratings for parental care compared to other care settings and the reliance on parent reports of child behavior were drawbacks of the otherwise good child care and child outcome measures. The data did not permit us to evaluate other supports for teen mothers besides child care that have been shown to be effective, such as in-home nurse visitation programs, and we could not distinguish between the consequences of child care provided through intervention programs for teen parents and market care available to anyone.

Despite these limitations, our study contributed to the literature on child care in several ways. It compared the consequences of different types of parental and nonparental child care among teen-parent families, a vulnerable population for whom child care is often considered to be a promising policy intervention. The use of latent class analyses to identify prevalent care arrangements across three points in early childhood in this nationally representative sample illuminated the social contexts in which teen-parent families are immersing their children in the

United States in the new century. Our consideration of multiple domains of outcomes for both children and mothers and the interplay between maternal and child outcomes and our comparison of teen-parent and nonteen-parent families also contributed useful knowledge.

Future qualitative and quantitative research should focus on *why* different types of nonparental care were beneficial for this marginalized population of families. Our findings identified three explanatory pathways: the selection of disadvantaged teen-parent families into the “parental care” class, the duration of children’s exposure to nonparental care, and the positive associations between nonparental care arrangements and maternal socioeconomic and childbearing outcomes. The interplay between these pathways was problematic for “parental care” families, who started out at a socioeconomic disadvantage that was later compounded by a lack of nonparental care. Data limitations prevented us from considering the quality of care settings as an additional pathway, so researchers should consider this important factor in the future. Their often lower scores on reading and math assessments and parent-reported behavior scales in the year before kindergarten set up the children in the “parental care” class for disparities in the transition to school. Past research has shown that a lack of readiness for school has serious long-term socioeconomic consequences (Entwisle, Alexander, & Olson, 2004). Research should consider the experiences of teen parents’ children, and the interface between their preschool care arrangements and school experiences, during and beyond the school transition. Finally, research should consider why these young mothers did not disproportionately benefit from nonparental care arrangements compared to their peers, even though they were in a life stage in which the ability to focus on schooling or work is critical.

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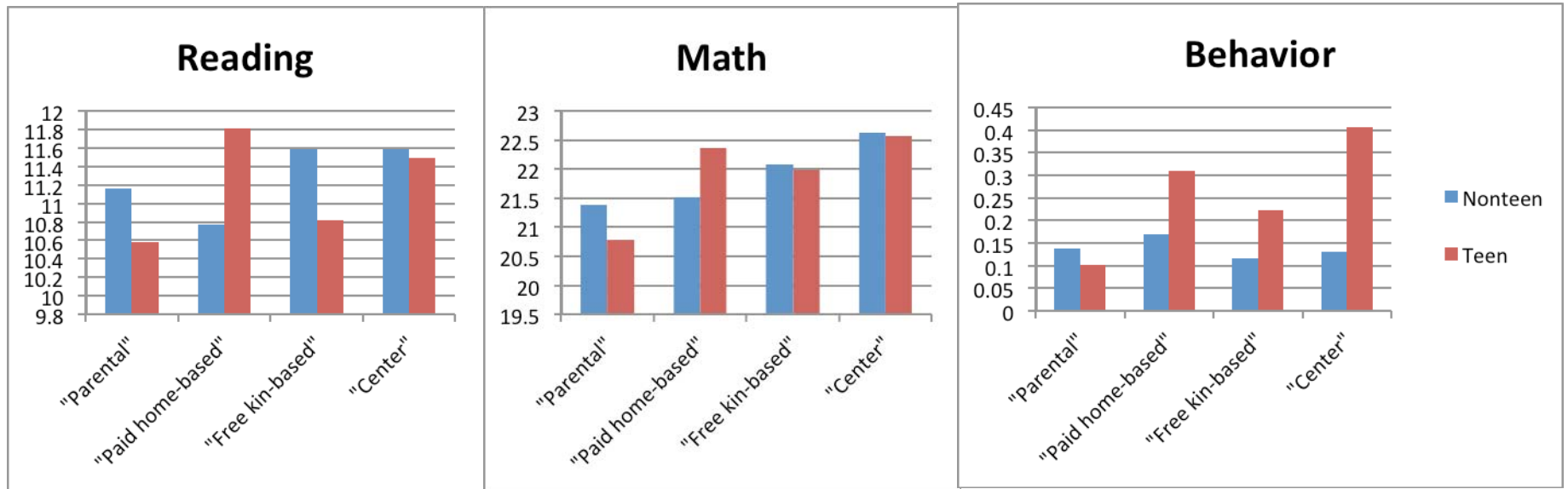
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Figure 1

Predicted Wave 3 Child Outcomes for Hypothetical Cases, by Teen Parent Status and Care Class (N ≈ 7300 reading, 7350 math, 7900 behavior)



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

Notes: Multivariate OLS regression analyses accounted for complex survey design and included the same controls as Table 5. All variables except latent class and teen parent status are set to weighted means (if continuous)/modes (if categorical) for the subsample of teen parents' children.

Table 1
Analysis Variables by Child Care Class for Teen-Parent Families: Weighted Means (N ≈ 7900, n ≈ 900 teen parents)

Variable	Latent class (teen parents)				All teen	All nonteen
	"Parental"	"Paid home-based"	"Free kin-based"	"Center"		
<i>Control variables</i>						
Maternal age at birth (years)						
15-17	0.27	0.21	0.33	0.28	0.28	0 *
18-19	0.66	0.59	0.62	0.64	0.63	0 *
≥ 20	0.07	0.21 *	0.05 *	0.08	0.09	1 *
Paternal age at birth (years)						
15-19	0.29 *	0.49 *	0.42	0.37	0.37	0 *
20-24	0.50	0.33 *	0.48	0.43	0.46	0.16 *
≥ 25	0.17	0.15	0.08 *	0.14	0.14	0.83 *
Missing	0.04	0.02	0.02	0.06	0.03	0.02
Child race/ethnicity						
Non-Hispanic White	0.45 *	0.36	0.31	0.34	0.39	0.56 *
Non-Hispanic Black	0.19 *	0.26	0.26	0.37 *	0.24	0.13 *
Hispanic	0.32	0.36	0.36	0.27	0.33	0.24 *
Other	0.04	0.03	0.07	0.02 *	0.04	0.07 *
Female child ^a	0.53	0.43	0.46	0.44	0.48	0.49
Child in very good health ^a	0.86	0.85	0.89	0.89	0.87	0.89
Low birth weight ^a	0.11	0.07 *	0.11	0.12	0.10	0.07 *
Standardized behavior, Wave 1	0.19	-0.07	0.21	0.11	0.14	0.09
Cognitive T-score, Wave 1	50.37	50.10	49.24	50.79	50.11	50.12
Grandmother's education						
< High school	0.56 *	0.37	0.38 *	0.51	0.48	0.35 *
High school	0.26	0.33	0.35	0.27	0.30	0.30
Some college	0.10 *	0.21	0.17	0.13	0.14	0.14
College degree	0.08	0.10	0.10	0.09	0.09	0.21 *
Mother married at birth ^a	0.28	0.28	0.19	0.10 *	0.23	0.74 *
Mother's years of education, Wave 1	10.45 *	11.04	11.16 *	11.26 *	10.83	13.05 *
Income-to-needs ratio, Wave 1	113.59	130.62	123.59	121.52	119.85	243.16 *
Food security, Wave 1						
Insecure without hunger	0.13	0.09	0.10	0.13	0.12	0.09
Insecure with hunger	0.06	0.03	0.03	0.01 *	0.04	0.02 *
Secure	0.81	0.88	0.86	0.87	0.84	0.88 *
Mother's employment, Wave 1						
Full time	0.16 *	0.50 *	0.37 *	0.29	0.28	0.40 *
Part time	0.09	0.12	0.19	0.15	0.13	0.15
None	0.76 *	0.38 *	0.44 *	0.56	0.59	0.45 *
Mother's school enrollment, Wave 1						
Full time	0.07 *	0.15	0.28 *	0.36 *	0.17	0.03 *
Part time	0.08	0.08	0.11	0.11	0.09	0.06 *
None	0.85 *	0.77	0.61 *	0.53 *	0.73	0.91 *
NCATS parenting, Wave 1	33.09	33.33	33.37	33.85	33.30	34.81 *
Observed parenting, Wave 1	0.79	0.79	0.76	0.77	0.78	0.79
Home environment, Wave 2	11.19	11.10	11.86 *	10.77	11.28	12.16 *
Two Bags parenting, Wave 2	5.35	5.46	5.38	5.46	5.39	5.65 *

Table 1 - Continued						
<i>Analysis Variables by Child Care Class for Teen-Parent Families: Weighted Means (N ≈ 7900, n ≈ 900 teen parents)</i>						
Variable	Latent class (teen parents)				All teen	All nonteen
	"Parental"	"Paid home-based"	"Free kin-based"	"Center"		
<i>Child attachment</i>						
Insecure-avoidant	0.16	0.21	0.19	0.13	0.17	0.16
Disorganized	0.21	0.19	0.20	0.14	0.19	0.12 *
Insecure-ambivalent	0.08	0.10	0.07	0.16	0.09	0.09
Secure	0.55	0.50	0.54	0.57	0.54	0.63 *
<i>Maternal outcomes (Wave 3)</i>						
Mother's years of education	11.03 *	11.78	11.99 *	11.94 *	11.51	13.40 *
Income-to-needs ratio	124.08 *	157.06	146.55	153.36	138.84	256.80 *
Mother's subsequent birth ^a	0.15 *	0.03 *	0.07	0.04 *	0.10	0.04 *
<i>Mother's employment</i>						
Full time	0.24 *	0.59 *	0.56 *	0.55 *	0.42	0.45
Part time	0.10	0.12	0.11	0.07	0.10	0.15 *
None	0.67 *	0.29 *	0.33 *	0.38 *	0.49	0.40 *
<i>Child outcomes (Wave 3)</i>						
Reading T-score	45.16 *	48.22 *	46.48	48.21	46.40	50.59 *
Math T-score	45.30 *	47.76	46.89	48.11	46.48	50.61 *
Standardized behavior	-0.10	0.14	0.08	0.24 *	0.03	0.10

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

Notes: Analyses account for sample design. † p<.10 * p<.05 ** p<.01; two-tailed t-tests comparing that class to the overall mean for teen parents, except the rightmost column which compares teen to nonteen parents ^a 1 = yes

Table 2
Class-Conditional Response Probabilities of Four-Class Model from Latent Class Analysis (LCA) of Child Care Arrangements, for Teen-Parent Families (N ≈ 950)

Variable	LCA Class			
	Class 1: “Parental Care”	Class 2: “Paid Home-Based Care”	Class 3: “Free Kin-Based Care”	Class 4: “Center Care”
Estimated population share, subsample	39%	21%	21%	18%
Wave 1 (9 months)				
Parental care only	0.78	0.32	0.21	0.26
Center care only	0.03	0.03	0.03	0.27
Center + other	0.00	0.00	0.01	0.10
Free kin-based care	0.11	0.27	0.73	0.23
Paid home-based care	0.09	0.38	0.01	0.13
Wave 2 (2 years)				
Parental care only	0.94	0.20	0.44	0.05
Center care only	0.00	0.00	0.00	0.71
Center + other	0.00	0.06	0.00	0.09
Free kin-based care	0.00	0.19	0.56	0.11
Paid home-based care	0.06	0.55	0.00	0.05
Wave 3 (4½ years)				
Parental care only	0.32	0.12	0.15	0.08
Center care only	0.49	0.33	0.32	0.67
Center + other	0.09	0.31	0.36	0.16
Free kin-based care	0.06	0.07	0.13	0.03
Paid home-based care	0.04	0.16	0.04	0.06
Estimated population share, full sample	48%	20%	17%	14%
Estimated population share, nonteen parents	49%	23%	15%	13%

Source: Early Childhood Longitudinal Study-Birth Cohort, 2001-2005. N≈950.

Notes: “Paid home-based care” is any paid care taking place outside of a center.

Shaded cells indicate the most prevalent child care arrangement for each class at each wave.

Latent class analyses on the full ECLS-B sample resulted in the same 4 classes; population shares shown above.

Table 3

Characteristics of Care by Child Care Class for Teen- and Nonteen-Parent Families: Weighted Means (N varies)

	Nonteen-parent families				Teen-parent families				All
	"Parental"	"Paid home-based"	"Free kin-based"	"Center"	"Parental"	"Paid home-based"	"Free kin-based"	"Center"	
Hours/week in nonparental child care									
Wave 1	3.68 ^b	26.39 ^a	24.87 ^a	27.62 ^a	7.27 ^b	22.19 ^a	26.04 ^a	26.91 ^a	15.10
Wave 2	0.16	31.49 ^a	27.19 ^a	33.53 ^a	-0.29	30.43 ^a	25.78 ^a	34.67 ^a	15.39
Wave 3	12.72 ^b	31.21 ^a	31.86 ^a	31.61 ^a	17.25 ^b	31.29 ^a	35.17 ^a	31.76 ^a	22.44
Monthly cost of nonparental child care (US dollars)									
Wave 1	29.94	277.65 ^{ab}	59.07 ^{ab}	320.24 ^{ab}	22.80	136.15 ^{ab}	13.99 ^b	81.85 ^{ab}	119.35
Wave 2	7.30 ^b	369.60 ^{ab}	58.45 ^{ab}	450.53 ^{ab}	2.29 ^b	208.60 ^{ab}	22.22 ^b	136.28 ^{ab}	144.53
Wave 3	239.54 ^b	487.35 ^{ab}	241.20 ^b	533.16 ^{ab}	47.31 ^b	178.90 ^b	71.91 ^b	97.89 ^{ab}	305.72
Child care total quality rating, Wave 2	59.63	60.98	62.50 ^b	62.36	59.91	58.49	57.23 ^b	62.33	61.55
Child care total quality rating, Wave 3	65.19 ^b	64.26	62.55 ^a	63.11 ^a	57.27 ^b	63.53 ^a	61.16 ^a	61.89 ^a	63.42

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

Notes: Analyses account for sample design. Some variables such as child care observation ratings have smaller Ns—see text. ^a indicates $p > 0.05$ difference between this mean and the mean of the "parental care" class for the same subsample. ^b indicates $p > 0.05$ difference between the nonteen and teen subsamples for the same

Table 4

Summary of Multinomial Logistic Regressions Predicting Child Care Class for Teen (n ≈ 900) and Nonteen (n ≈ 7000) Subsamples.

Variable (ref. cat.) ^{ab}	Teen-parent families									Nonteen-parent families								
	"Paid home-based"			"Free kin-based"			"Center"			"Paid home-based"			"Free kin-based"			"Center"		
	B	SE B	OR	B	SE B	OR	B	SE B	OR	B	SE B	OR	B	SE B	OR	B	SE B	OR
Race/ethnicity (non-Hispanic White)																		
Non-Hispanic Black	0.89	0.47	2.43 †	0.89	0.45	2.44 †	1.00	0.48	2.72 *	0.13	0.08	1.13	0.39	0.10	1.47 **	0.63	0.08	1.89 **
Hispanic	1.07	0.49	2.90 *	1.20	0.36	3.32 **	0.63	0.49	1.89	0.14	0.08	1.15	0.30	0.09	1.36 **	-0.06	0.16	0.94
Other	0.05	0.53	1.05	1.42	0.46	4.12 **	-0.14	0.52	0.87	-0.12	0.10	0.89	0.55	0.10	1.72 **	0.14	0.11	1.15
Female child ^c	-0.48	0.31	0.62	-0.46	0.21	0.63 *	-0.58	0.29	0.56 †	0.04	0.06	1.04	0.16	0.07	1.17 *	-0.13	0.05	0.87 *
Child in very good health ^c	-0.01	0.42	0.99	0.11	0.35	1.11	0.10	0.43	1.11	-0.15	0.08	0.86 †	0.15	0.10	1.17	-0.21	0.10	0.81 †
Low birth weight ^c	-0.58	0.37	0.56	-0.02	0.30	0.98	0.14	0.30	1.15	0.15	0.07	1.16 *	0.19	0.07	1.22 *	0.05	0.09	1.05
Child behavior	-0.23	0.14	0.79	0.10	0.12	1.11	0.01	0.15	1.01	0.07	0.03	1.07 †	-0.02	0.03	0.98	0.01	0.03	1.01
Grandmother's education (college degree)																		
< High school	-0.47	0.52	0.62	-0.08	0.48	0.92	0.49	0.56	1.64	0.09	0.09	1.09	0.14	0.10	1.15	-0.42	0.11	0.66 **
High school degree	-0.10	0.54	0.90	0.26	0.49	1.30	0.09	0.53	1.10	0.15	0.11	1.16	0.31	0.09	1.36 **	-0.02	0.12	0.98
Some college	0.89	0.64	2.45	0.72	0.55	2.06	0.60	0.67	1.83	0.05	0.14	1.05	0.04	0.10	1.04	-0.30	0.13	0.74 *
Mother married at birth	0.22	0.33	1.25	-0.07	0.29	0.93	-0.95	0.53	0.39 †	-0.67	0.09	0.51 **	-0.49	0.08	0.61 **	-0.86	0.07	0.42 **
Mother's years of education	0.15	0.12	1.17	0.26	0.10	1.30 *	0.36	0.11	1.44 **	0.15	0.01	1.17 **	0.10	0.02	1.10 **	0.19	0.02	1.20 **
Income-to-needs ratio (>200%)																		
0-50% of poverty line	-0.24	0.51	0.78	-0.20	0.48	0.82	-0.19	0.53	0.83	-0.34	0.16	0.71 *	-0.20	0.17	0.82	-0.26	0.15	0.77
51-100% of poverty line	-0.29	0.56	0.75	-0.04	0.47	0.96	0.21	0.55	1.23	-0.48	0.10	0.62 **	-0.13	0.14	0.88	-0.13	0.11	0.88
101-200% of poverty line	-0.36	0.55	0.70	-0.51	0.43	0.60	-0.12	0.55	0.89	-0.23	0.08	0.79 *	-0.08	0.10	0.93	-0.27	0.08	0.77 **
Food security (secure)																		
Insecure without hunger	-0.60	0.65	0.55	0.06	0.42	1.06	0.18	0.54	1.20	-0.02	0.09	0.98	-0.50	0.11	0.61 **	0.07	0.12	1.08
Insecure with hunger	-0.39	0.76	0.68	-0.47	0.43	0.62	-1.62	0.70	0.20 *	0.41	0.20	1.50 †	-0.04	0.29	0.96	-0.07	0.16	0.94
Mother's employment (none)																		
Full time	1.94	0.31	6.98 **	1.88	0.29	6.58 **	1.27	0.36	3.55 **	2.69	0.07	14.71 **	2.37	0.09	10.67 **	2.38	0.07	10.76 **
Part time	1.05	0.50	2.86 *	1.52	0.39	4.56 **	1.13	0.49	3.10 *	1.69	0.07	5.43 **	1.75	0.09	5.74 **	1.13	0.09	3.10 **
Mother's school enrollment (none)																		
Part time	-0.17	0.54	0.85	0.43	0.36	1.54	0.91	0.44	2.47 *	0.64	0.14	1.90 **	0.14	0.15	1.14	0.68	0.16	1.98 **
Full time	1.07	0.48	2.93 *	1.76	0.37	5.81 **	2.15	0.42	8.60 **	1.13	0.16	3.10 **	1.38	0.18	3.97 **	1.28	0.16	3.59 **
NCATS parenting	-0.01	0.04	0.99	-0.01	0.03	0.99	0.01	0.04	1.01	0.00	0.01	1.00	-0.02	0.01	0.98 *	0.00	0.01	1.00
Observed parenting	-0.55	0.75	0.58	-1.68	0.69	0.19 *	-0.62	0.96	0.54	0.03	0.17	1.03	0.27	0.18	1.32	-0.71	0.27	0.49 *
Two Bags parenting ^d	0.34	0.37	1.41	0.07	0.23	1.07	0.54	0.31	1.71 †	0.21	0.07	1.23 *	-0.09	0.07	0.91	0.36	0.06	1.44 **
Home environment ^d	0.03	0.05	1.03	0.12	0.05	1.13 *	-0.05	0.06	0.95	-0.14	0.01	0.87 **	-0.04	0.01	0.96 **	-0.10	0.01	0.91 **
Child attachment ^d (secure)																		
Insecure-avoidant	0.64	0.38	1.89	0.23	0.33	1.26	-0.28	0.36	0.75	-0.01	0.09	0.99	-0.18	0.09	0.84 †	-0.13	0.11	0.88
Disorganized	-0.12	0.47	0.88	0.02	0.28	1.02	-0.46	0.39	0.63	0.47	0.11	1.60 **	0.48	0.11	1.61 **	0.34	0.14	1.41 *
Insecure-ambivalent	0.42	0.54	1.52	0.09	0.49	1.09	0.84	0.45	2.32 †	-0.04	0.10	0.96	-0.07	0.14	0.93	-0.26	0.07	0.77 **

Source: Early Childhood Longitudinal Study-Birth Cohort, 2001-2005. Notes: † p<.10 * p<.05 ** p<.01; two-tailed tests. Analyses account for sample design. ^a All variables were measured at Wave 1 unless indicated. ^b Parent ages are included in models, but not shown. ^c 1 = yes Wave 2 measure

Table 5

Summary of Hierarchical Regression Analysis for Variables Predicting Age 4½ Child Outcomes, Teen Parent Subsample (n ≈ 850 reading/math, 900 behav

Variable (ref. cat.) ^a	Reading						Math						Behavior					
	Model 1			Model 2			Model 1			Model 2			Model 1			Model 2		
	B	SE B	B	B	SE B	B	B	SE B	B	B	SE B	B	B	SE B	B	B	SE B	B
Centered age, W3	0.27	0.05	0.22 **	0.30	0.05	0.24 **	0.59	0.07	0.36 **	0.59	0.06	0.36 **	0.02	0.01	0.07 †	0.02	0.01	0.09 *
Wave 1 equivalent ^b	0.04	0.03	0.08	0.01	0.03	0.02	0.09	0.03	0.13 **	0.04	0.03	0.05						
Centered age, W1	-0.05	0.12	-0.02	-0.09	0.10	-0.03	0.01	0.15	0.00	-0.06	0.14	-0.02	-0.03	0.02	-0.06	-0.04	0.02	-0.07 †
Latent class ("parental")																		
"Paid home-based"	1.85	0.57	0.13 **	1.20	0.64	0.08 *	1.78	0.76	0.09 *	1.23	0.73	0.06 *	0.24	0.13	0.09 *	0.20	0.12	0.07 †
"Free kin-based"	0.93	0.48	0.08 *	-0.02	0.55	0.00	1.53	0.64	0.09 *	1.00	0.68	0.06 †	0.18	0.11	0.08 †	0.07	0.11	0.03
"Center"	1.51	0.75	0.10 *	0.89	0.73	0.06	1.89	0.88	0.09 *	1.60	0.72	0.08 *	0.36	0.12	0.12 **	0.32	0.12	0.11 **
Mother's age (≥ 20 years)																		
15-17	-0.70	0.82	-0.06	0.09	0.87	0.01	-1.59	1.20	-0.10	-0.10	1.14	-0.01	-0.09	0.15	-0.04	0.02	0.14	0.01
18-19	1.86	0.95	0.17 †	1.50	1.00	0.14	2.04	1.17	0.14 †	1.70	1.11	0.12	0.23	0.17	0.11	0.19	0.16	0.09
Father's age (≥ 25 years)																		
15-19	1.06	0.92	0.10	0.06	0.90	0.01	2.10	1.01	0.15 *	1.08	1.01	0.08	0.24	0.14	0.11	0.15	0.16	0.07
20-24	0.95	0.81	0.09	0.15	0.71	0.01	0.88	0.86	0.06	-0.12	0.72	-0.01	0.26	0.15	0.13 †	0.20	0.14	0.10
Missing	2.00	1.09	0.07 †	1.20	1.06	0.04	1.89	1.32	0.05	0.65	1.21	0.02	0.24	0.18	0.04	0.13	0.18	0.02
NCATS parenting				0.01	0.05	0.01				0.17	0.07	0.10 *				0.02	0.01	0.07 †
Observed parenting				0.12	1.25	0.00				1.49	1.51	0.04				0.25	0.23	0.04
Two Bags parenting ^c				0.79	0.39	0.08 †				0.91	0.56	0.07				-0.01	0.10	0.00
Home environment ^c				0.11	0.07	0.06				0.08	0.10	0.04				0.05	0.01	0.15 **
Child attachment ^c (secure)																		
Insecure-avoidant				-0.35	0.63	-0.02				-1.62	0.76	-0.09 *				-0.23	0.12	-0.09 †
Disorganized				-0.82	0.52	-0.06				-3.25	0.60	-0.18 **				-0.20	0.11	-0.08 †
Insecure-ambivalent				-1.68	0.69	-0.09 *				-2.72	0.82	-0.11 **				-0.41	0.20	-0.12 *
Constant	5.78	1.52	**	0.34	3.93		12.17	1.76	**	0.95	5.60		-0.44	0.22	†	-2.30	0.71	**
Design-based F	11.39		**	8.80		**	10.73		**	8.61		**	2.74		*	6.20		**
R ²	0.12			0.25			0.22			0.36			0.05			0.19		

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

Notes: Analyses account for sample design effects. † p<.10 * p<.05 ** p<.01; one-tailed tests for latent classes and two-tailed otherwise

^a Standard control variables were included in model 2; included but not shown were race/ethnicity, child gender, health, and behavior, low birth weight, grandmother's education, mother married at birth, mother's education, income-to-needs ratio, food security, and mother's employment and school enrollment ^b "Wave 1 equivalent" is cognitive score for reading and math, and Wave 1 behavior is included as standard control ^c Wave 2 measure

Table 6
 Summary of Linear, Binary Logistic, and Multinomial Logistic Regression Analyses for Variables Predicting Wave 3 Maternal Outcomes, Teen Parent Subsample (n ≈ 900)

Variable (ref. cat.) ^a	Education			Income-to-needs ratio			New sibling ^b			Mother's paid employment ^c					
	B	SE B	B	B	SE B	B	B	SE B	OR	Part-Time			Full-Time		
	B	SE B	B	B	SE B	B	B	SE B	OR	B	SE B	OR	B	SE B	OR
Mother's age (≥ 20 years)															
15-17	0.33	0.16	0.09 *	-5.79	13.14	-0.03	0.05	0.41	1.05	0.58	0.59	1.78	0.13	0.45	1.13
18-19	0.10	0.13	0.03	27.59	14.64	0.13 †	0.10	0.34	1.10	0.33	0.57	1.40	0.45	0.40	1.56
Father's age (≥ 25 years)															
15-19	0.10	0.14	0.03	-0.98	11.71	0.00	-0.02	0.33	0.98	-0.80	0.44	0.45 †	-0.42	0.32	0.66
20-24	0.07	0.14	0.02	-8.44	9.37	-0.04	0.16	0.31	1.17	-0.77	0.50	0.46	-0.19	0.32	0.83
Missing	-0.18	0.17	-0.02	8.62	19.81	0.02	-0.19	0.53	0.83	-0.23	0.68	0.79	-0.55	0.68	0.58
Latent class ("parental care")															
"Paid home-based care"	0.17	0.12	0.04 †	20.93	11.81	0.08 *	-0.34	0.31	0.71	1.04	0.50	2.82 *	1.50	0.30	4.48 **
"Free kin-based care"	0.22	0.12	0.06 *	10.52	9.30	0.05	-0.32	0.20	0.72 †	0.73	0.41	2.07 *	1.21	0.28	3.35 **
"Center care"	0.10	0.11	0.02	21.81	11.76	0.08 *	-0.49	0.25	0.61 *	-0.01	0.61	0.99	1.17	0.32	3.23 **
Mother's years of education	0.81	0.04	0.78 **	10.68	2.39	0.17 **	-0.13	0.07	0.88 †	0.12	0.13	1.13	0.14	0.08	1.15 †
Income-to-needs ratio (>200%)															
0-50% of poverty line	-0.14	0.14	-0.03	-98.25	15.26	-0.40 **	0.40	0.33	1.50	-0.52	0.57	0.59	-0.38	0.34	0.69
51-100% of poverty line	-0.20	0.14	-0.05	-73.40	15.72	-0.34 **	0.50	0.35	1.64	-0.96	0.59	0.38	-0.10	0.30	0.90
101-200% of poverty line	-0.01	0.13	0.00	-46.62	15.01	-0.22 **	0.34	0.28	1.40	-0.24	0.56	0.78	0.08	0.27	1.08
Mother's employment (none)															
Full time	0.21	0.11	0.06 †	7.93	10.13	0.04	-0.01	0.21	0.99	0.26	0.48	1.30	0.83	0.29	2.29 *
Part time	0.01	0.11	0.00	9.09	10.47	0.03	-0.02	0.31	0.98	-0.11	0.42	0.90	0.93	0.23	2.53 **
Constant	2.79	0.50	**	75.05	33.51	*	0.77	0.98		-2.46	1.85		-3.32	1.28	*
Design-Based F	43.46		**	8.53		**	1.93		*	3.65		**			
R ²	0.71			0.30											

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

Notes: Analyses account for sample design effects. † p<.10 * p<.05 ** p<.01; one-tailed tests for latent classes and two-tailed otherwise

OR = odds ratio ^a All variables measured at Wave 1 unless otherwise indicated. All models include the standard control variables: race/ethnicity, child female, child in very good health, low birth weight, child behavior, grandmother's education, mother married at birth, food security, and mother's school enrollment ^b binary logistic regression compared to no additional children ^c multinomial logistic regression compared to not working