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Changes in Young Children's Family Structures and Child Care Arrangements

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Abstract

Family structure change can disrupt the settings of children's daily lives. Most scholarship focuses on disruption in the home environment. Moving beyond the home, this study explores the association between changes in family structure and changes in several dimensions of early child care. With longitudinal data from the NICHD Study of Early Child Care and Youth Development (n = 1,298), first-difference models reveal that family structure transitions are associated with changes in the type and quantity of early care as well as the number of care arrangements used, especially during the latter part of infancy. Given prior evidence linking these child care dimensions to behavioral and cognitive outcomes, these results suggest a policy-relevant mechanism by which family change may create inequalities among children.

Keywords

Child care; Child development; Family structure; Family instability; Policy

Background and Literature Review

The romantic and marital lives of U.S. adults have become increasingly fluid, with partnership histories often including more than one coresidential union. This fluidity can have negative implications for children's short-term and long-term well-being and socioeconomic attainment (Cherlin 2009; McLanahan 2004; Wu 1996). At the same time, growing evidence suggests that family disruptions early in life can be especially consequential for children, even net of subsequent disruptions (Cavanagh and Huston 2008; Ryan and Claessens 2013).

Unpacking these associations between family instability and child development is an important task for population researchers. As for the underlying mechanisms, the literature has emphasized the changing socioeconomic circumstances brought on by parents' partnership transitions, but disruptions in children's everyday developmental ecologies triggered by changes in family structure have also garnered attention (Crosnoe and Cavanagh 2010). For the most part, the family context has been the focus of research on such ecological disruptions, with particular attention to parenting and the home environment (Beck et al. 2010; Cavanagh and Huston 2006; Osborne and McLanahan 2007). Yet, several factors motivate a closer look at early child care as an additional ecological channel for family instability effects. First, because child care is organized, funded, and overseen by parents, it is sensitive to any constraints and pressures the parents face. Second, ample evidence suggests that care arrangements have both positive and negative effects on children that persist beyond childhood. Third, child care has long been viewed as an appropriate instrument for policy intervention. Fourth, a focus on child care naturally highlights early childhood, which has been identified as a critical period in the long-term effects of family

instability on the life course (Blau 2001; Clarke-Stewart and Allhusen 2005; Garces et al. 2002; Gordon and Chase-Lansdale 2001; Morrissey 2008; Vandell et al. 2010).

This study, therefore, connects changes in family structure to changes in early child care using the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development (SECCYD), which gathers family structure data and uses multimethod measures of child care for a birth cohort of U.S. children across numerous time points. First-difference models that address the potential impact of stable unobserved confounds provide evidence as to whether family structure changes are associated with changes in three aspects of child care arrangements (type, quantity, and number). Coupled with the extant literatures that link both family structure change and these child care factors to children's short-term and long-term behavioral, psychological, and academic outcomes, evidence of a link between changes in family structure and child care can position early child care as a theoretically grounded mechanism of the risks of family instability for youth and a potential policy lever for what can be done to counteract these risks.

Family Structure Change

In general, research suggests that children experience better outcomes when they live with two married biological parents rather than in other household arrangements, such as stepparent and single-parent homes or families headed by cohabiting parents. Scholars generally agree that these patterns are a consequence of a system of obligations and rewards that define marriage in the United States but also reflect the socioeconomic and emotional resources that select some adults into stable marriages (Fomby et al. 2011). Together, selection and protection processes shape parenting, parent-child relationships, availability of social support, organization of the home, and family time use in ways that are advantageous to children (Amato 2010; Foster and Kalil 2007; Gibson-Davis and Gassman-Pines 2010; McLanahan and Sandefur 1994).

A child's family structure at any one age, however, is only a point on a family structure trajectory (Wu and Martinson 1993). Divorce, cohabitation, and remarriage mean that these trajectories may involve many transitions between family structure statuses. Consequently, dynamic measures of family structure—experience of a transition, cumulative counts of transitions, and transition sequences—have added significant explanatory power to models of child well-being above and beyond static family structure measures. These patterns cover a range of developmental indicators but are generally strongest for behavioral problems. Some evidence suggests that they are also quite pronounced during early childhood (Cavanagh and Huston 2008; Cavanagh et al. 2008; Cooper et al. 2011; Fomby and Cherlin 2007; Frisco et al. 2007; Hao and Xie 2002; Li 2007; Magnuson and Berger 2009; Osborne and McLanahan 2007).

The instability and change hypothesis has provided much of the theoretical guidance for this research. It posits that changes in a parent's marital or romantic status constitute a major stressor for parent and child. Exits or entrances of romantic partners are associated with changes in parenting behaviors, household routines, and economic well-being that, in turn, disrupt parents' ability to effectively manage their children's lives and be emotionally sensitive to them. These transitions can also result in residential moves and disrupt the degree to which children are able to draw support from others and engage with their environments (Amato 2000; Crosnoe and Cavanagh 2010; Wu and Martinson 1993). Although many children never experience a family structure change, those who experience one family transition are at greater risk for subsequent transitions and their concomitant stresses (Wu and Martinson 1993). Thus, young people who experience multiple family

structure changes often experience more compromised well-being than those who experience no change or only one (Cavanagh and Huston 2006; Teachman 2003).

Because cumulative family instability is a dynamic process unfolding over time, the *timing* of family instability in children's development is important. Recent scholarship suggests that family structure transitions in early childhood are especially consequential (Beck et al 2010; Cavanagh and Houston, 2008; Ryan and Claessens 2013). These findings may reflect that early childhood is a critical developmental period. Between ages 0 and 3, children undergo rapid brain development and form fundamental attachments to parents, which establish developmental trajectories that are mutable but difficult to change over time. Younger children also require more intensive care and supervision than school-aged children (Bowlby 1969; Drago 2009; Shonkoff et al. 2009; Walker et al. 2011). Taken together, family structure changes such as divorce or repartnering during early childhood likely increase stress levels for children and parents and affect both the quality and quantity of parental inputs (Williams and Dunne-Bryant 2006). Alternatively, early family change might be selective of parents with greater emotional or economic disadvantages. If so, the link between early family instability and later outcomes may be less a developmental phenomenon and more an example of selection processes (Ryan and Claessens 2013).

Regardless of whether the significance of family structure change for early childhood development reflects selection into and through various family structures, the actual experience of living in and changing between such family structures, or both processes at once, illuminates how even one family structure transition plays out in a child's life is an important task. This task is especially important to consider for the crisis periods of household routine disruption that can follow the end or start of parents' coresidential relationships. Turning attention to child care, another major setting of early childhood, can be a valuable part of this task.

Early Child Care Arrangements

Outside the family, child care is a major component of the overlapping contexts that define early childhood (Bronfenbrenner 1979). Indeed, the majority of American children spend time outside of parental care in the years prior to entering school, reflecting the rapid increase in maternal employment and changing notions about school readiness (U.S. Census Bureau 2011). Evidence suggests that early care arrangements are associated with children's adjustment and functioning, even long after children have grown out of care. Thus, early nonparental care arrangements represent a potential point of disruption that could matter in the short and long term (Committee of Family and Work Policies 2003; Gordon and Chase-Lansdale 2001; Hofferth 2001; Scarr 1998;). Such arrangements are often broken down into three structural/organizational dimensions—number, type and quantity—each of which has been studied extensively (Clarke-Stewart and Allhusen 2005; Duncan and NICHD ECCRN 2003; Scarr 1998).

Number of arrangements is important to consider because parents often assemble a patchwork of child care to address their needs (e.g., covering parental absences), preferences (e.g., emotional care, mental/cognitive stimulation), and constraints (e.g., money) (Blau 2001; Johansen et al. 1996; Morrissey 2008). Relying on multiple arrangements is often necessary and practical, and when systematically organized across quality settings, can even be ideal. In reality, however, patchworks of care offer less-optimal ecologies for young children's development, especially their social and emotional functioning, because they give children a less consistent, stable, and predictable care environment (De Schipper et al. 2004; Morrissey 2009; NICHD Early Child Care Research Network [ECCRN] 2005; Tran and Weinraub 2006). Nonparental care can also be differentiated by *type*, given that it is provided in many settings by various adults. A basic distinction is between formal center-

based care by certified providers and informal home-based care by relatives or nonrelatives. Compared with both informal arrangements, centers (including preschools) offer more structured, stimulating, and developmentally appropriate activities led by better-trained staff. At the same time, they typically have higher adult-child ratios, are less child-focused, and involve more peer interaction. As a result, formal care has been associated with both cognitive development and problem behavior relative to informal care, especially as children age and formal care becomes increasingly available and normative (Belsky 1999; Belsky et al. 2007; Fuller 2007; Magnuson et al. 2004; Vandell et al. 2010). Another dimension, *quantity*, refers to the time children spend in nonparental care, typically measured in hours per week. Evidence suggests that large amounts of time in care are associated with less positive outcomes for children, especially behaviorally. Even high-quality care follows a pattern of diminishing returns, with declining or reversing benefits as care approaches full-time status (Crosnoe 2007; Loeb et al. 2007; NICHD ECCRN 2003, 2005; Raver 2002).

These three dimensions overlap considerably in terms of what they predict and are predicted by. Prior work suggests a basic sequence for studying them, beginning with considerations of number and types of arrangements that are often paramount in parents' decision-making and then exploring quantity (Augustine et al. 2009).

Linking Changes in Family Structure and Early Child Care

Family instability and child care, therefore, are each linked to child outcomes. To explore whether changes in family structure have implications for children through changes in child care, the links between family instability and care arrangements need to be examined. In this spirit, our general hypothesis is that family change will disrupt child care arrangements. This general association, however, needs to be understood in relation to four mechanisms (socioeconomic, necessity, parental resources, and socioemotional) aligned with the instability and change perspective.

First, parents' partnership changes can constrain the financial resources available to them. As such, they alter what is affordable and cost-effective, prompting a shift in kinds of care that can be accessed and how much care can be secured (Blau 2001; Early and Burchinal 2001; Morrissey 2008). Thus, lower income levels and more income volatility can link family change to greater reliance on less-expensive, informal care arrangements, including using patchworks of care as a last resort, not preference.

Second, reflecting the changing socioeconomic circumstances just described, parents' work lives are also affected when they change partnership statuses, altering the necessity of child care (Bianchi 2000; McLanahan 2004). When work demands increase the need for nonparental care for children (vs. wanting care for other reasons) and require greater amounts of such care, parents may be forced into suboptimal care arrangements just to cover the gaps (Gordon et al. 2008; Morrissey 2008). Thus, altered work schedules and demands can link family change to use of flexible care arrangements (e.g., informal, patchworks) for longer periods.

Third, changes in parents' partnerships affect parental resources—that is, the ability of parents to meet care demands. The formation or dissolution of parents' partnerships often involve entry or exit of second parents, parental figures, and nonparental adults (e.g., grandparents, other kin) in ways that change social support for care. Changes in the adults present in a household may also be accompanied by changes in the children who are present, with stepsiblings and half-siblings entering and exiting and the arrival of new babies to strain care capabilities and resources (Gordon et al. 2004; Mollborn et al. 2011, 2012). Thus, the fluid presence of others in the household and fluctuations in the amount of care needed

across all children can link family change to a greater likelihood of any one child being in more informal care arrangements (or combinations of care).

Fourth, relationship transitions can affect parenting efficacy, with emotional distress interfering with the translation of parenting values into sustained behavior. Consequently, the effort that goes into finding, securing, and managing care that is adequate, appropriate, and affordable within a given child care market may be harder for parents with unstable romantic lives (Augustine et al. 2009; Bowman 1997; Clarke-Stewart and Allhusen 2005; Gordon et al. 2008). Thus, socioemotional strains associated with family change can reduce parents' abilities, net of necessities and resources, to follow through on their child care preferences.

Overall, then, family structure transitions should be associated with changes in the type, number, and multiplicity of early child care. In addition to our general hypothesis, therefore, we pose more specific hypotheses related to these mechanisms. The mediation hypothesis is that a set of other family and maternal circumstances (e.g., changing socioeconomic and work statuses, entry/exit of kin and siblings, and mothers' socioemotional functioning) will explain associations between family changes and child care changes. The moderation hypothesis is that these associations will be more likely to appear in contexts capturing the riskier side of these mechanisms (e.g., socioeconomic disadvantage, high household fluidity, and maternal socioemotional disruptions).

Finally, a third specific hypothesis concerns timing. Given the age-graded fluidity in child care arrangements early in life (Clarke-Stewart and Allhusen 2005) and the early foci of interventions targeting human and social capital development (Heckman 2006), this study examines these child care dimensions (and associated mediation/moderation processes) with attention to the age of children experiencing changes. Overall, we expect that the hypotheses will be most likely to hold among younger children: infants are expected to fit the hypothesized patterns more than toddlers and young children, given that the earliest years of life are when available options for child care (especially formal care) are most limited, preferences for mixing home-based arrangements as developmentally appropriate are strongest, and maternal employment tends to involve the most stress in managing children's care (Clarke-Stewart and Allhusen 2005; Leibowitz et al. 1992; Morrissey 2008; Waldfogel 2006).

Methods

Data

The SECCYD followed a sample of children from birth through adolescence, with the major goal of documenting child care and family experiences and how they related to children's development (NICHD ECCRN 2005). Families were recruited from hospitals in which mothers had just given birth around Little Rock, AR; Irvine, CA; Lawrence, KS; Boston, MA; Philadelphia, PA; Pittsburgh, PA; Charlottesville, VA; Morganton, NC; Seattle, WA; and Madison, WI. To be selected for the sample, the mother had to be older than 18 and conversant in English, the infant had to be a singleton and healthy, and the family could not be planning to move. When infants were 1 month old, 1,364 families were enrolled. Although the eligibility criteria eliminated some low-income families, the sample was diverse (e.g., 24 % were nonwhite children, 11 % were mothers without a high school education, and 14 % were single mothers). The analytical sample included 1,298 children with available data on their care arrangements at ages 1, 6, 24, 36, and 54 months. The Stata suite of *mi* commands was used to estimate the 2 % of the remaining data that were missing (StataCorp 2011).

Measures

Given the dynamic emphasis of this study, measurement focused on changes in family structure and child care variables between each interval in the study period (1, 6, 12, 24, 36, and 54 months old) as well as several point-in-time and change-over-time mediators/moderators.

Parents reported on up to three child care arrangements. First, type of primary care was collapsed into four categories: (1) parent, (2) informal nonparent relative (e.g., grandparents), (3) informal nonrelative (e.g., home-based day care, in-home sitters), and (4) nonparental formal (e.g., center care). A binary variable indicated whether a child had changed type of primary arrangement (e.g., from parent to formal care or formal to informal relative care) between study waves. Second, we differentiated children on whether they experienced a change in the total number of care arrangements between waves with a binary variable. Third, quantity of care was measured continuously as an absolute change in the hours per week children spent in nonparental care arrangements. Although some children's primary care arrangements were parent care, they may have spent a small amount of time in formal or informal care, and hence, would still receive a nonzero value (if they also experienced change in the hours in care between waves).

For family structure, we used mother-reported household rosters and relationship status to code children as living with married biological parents, cohabiting biological parents, married stepparents, or cohabiting stepparents, or in a single-mother household. Any movement from one category to another between waves was coded as a change in family structure (Cavanagh and Huston 2006). In total, 258 children experienced at least one family change. The maximum number of children (109) experienced change between the ages of 36 and 54 months, compared with a range of roughly 50–100 children in other periods.

Measures of other family/maternal circumstances tapped the three mechanisms of interest. For the socioeconomic mechanism, a family income-to-needs ratio was calculated as total family income divided by 1991–1995 poverty thresholds. The family income-to-needs ratio was a continuous point-in-time measure, and an income-to-needs change score was created using the scale of two waves (e.g., the income-to-needs value at 1 month and at 6 months) to indicate income mobility. For the necessity mechanism, we measured the number of hours/week mothers worked outside the home, with no such work coded as 0. A change score captured the difference in hours between waves. A series of variables captured the parental resources mechanism. A binary variable identified whether any household transitions (entries and exits) of adult kin occurred between waves, another indicated whether non-infant siblings exited or entered the household, and a third identified new births in the household. Importantly, the findings and strength of these household composition variables were robust to different operationalization of movements, such as distinguishing between entries and exits, and so we chose the most parsimonious coding strategies that captured only whether changes occurred. For the socioemotional mechanism, a 20-item scale gauged maternal depression according to the Center for Epidemiological Studies Depression Scale (Radloff and Locke 1986). A change score denoted changes between waves. Residential mobility was operationalized as a binary variable of whether the child had moved homes between waves.

Plan of Analyses

Analyses involved first difference models estimated with the fixed effects procedure in Stata (see Allison 2005). The goal was to estimate associations between the focal family predictors and child care outcomes net of selected covariates; however, to address selection processes, we wanted to go beyond the conventional approach of including observable

control variables. The fixed-effects approach leverages within-child changes in predictors and outcomes (vs. between-child comparisons) to increase the degree to which unobserved confounds can be controlled. In terms of basic family structure variables, for example, this approach compared a child's outcome during a time of her/his life spent in one family structure to the time of her/his life spent in another family structure instead of comparing the outcome of a child in one family structure with the outcome of a child in another family structure. Doing so effectively controlled for any stable characteristic of children and families, even those that could not be directly observed. Yet, our models had an added layer of complexity in that predictors and outcomes were themselves measured in terms of changes rather than statuses as a way of focusing more closely on transitions. Thus, they captured whether a child was more or less likely to experience a change in child care during a period of his/her life in which a change in family structure occurred (compared with a period of family stability). This specification differenced out stable effects of time-invariant confounds while also taking into account the person-specific average level of change.

Such models were estimated for each child care outcome. The first, most parsimonious model included family structure change between waves (between the ending and starting wave) and family structure at the starting wave. For example, when change in child care hours is measured between 1 month and 6 months old, the family structure *change* indicator captured change between 1 month (starting wave) and 6 months (ending wave), and the family structure *status* indicator captured family structure status at 1 month. The child's age (measured at the starting wave) was also included as a set of dummy variables. In addition, controls were added for the type of care the child was in at the starting wave to take into account: for example, the greater propensity for children in parent care to experience a change in their care arrangement as mothers returned to work. The second model included interactions between child's age and family structure change to examine whether the latter was more highly correlated with changes in care at younger ages. The third model controlled for other family/maternal circumstances (both wave-specific and cross-wave), testing potential mediators of any observed effects of family structure change on child care outcomes. The final model estimated these family/maternal circumstances as moderators by interacting them with the family change variable.

Results

A Descriptive Picture of Family Structure, Child Care, and Other Factors

Although most variables (e.g., income-to-needs, maternal employment, and maternal depression) were measured continuously for multivariate analyses, we converted all variables to categories for our initial descriptive look to facilitate interpretation and comparison (see Table 1). Most mothers were married at the time of the child's birth (78 %). Another 8 % lived with cohabiting partners, and approximately 14 % had no partner. By age 54 months, about one-fifth of the children had experienced some family structure change: 13 % experienced one transition, and about 7 % experienced two or more, with rates the highest for nonmarital births.

Turning to socioeconomic circumstances, one-fifth of families lived below the poverty line at the start of the study, and another one-fifth lived between 100 % and 185 % of the line. Children who experienced family change were more likely to be living in poverty at the start of the study. About 10 % of the sample experienced no change in income-to-needs over time, compared with nearly three-quarters of the sample experiencing cross-wave changes at least twice.

Changes in maternal employment were also common, with more than two-thirds of the sample experiencing two or more category changes in employment hours, including having

their mothers moving into and out of the labor force. About 14 % of the sample mothers never worked during the study period. Starting at the study child's 6-month interview, more than one-half of the mothers worked some combination of part-time and full-time during the study period, 29 % worked full-time only, and fewer than 2 % worked part-time only. Among families experiencing any family structure change, maternal employment histories were marked by more changes.

Almost 30 % of mothers reported some change in depression. About one-quarter reported one change in depression category (i.e., a cross-wave difference in depression score), and just under 5 % experienced two or more changes. Overall, mothers who experienced partner change had higher initial depression scores but were less likely to change depression scores over time. About one-third of the sample made one residential move, and another one-quarter experienced two or more moves. Those who experienced any family change were significantly more likely to make multiple residential moves than those who did not.

In terms of household composition, more than one-half of mothers who experienced partner changes during the study period also experienced the entry or exit of an adult family member, compared with only one-quarter of mothers who did not experience a change. Similarly, 28 % of the children who experienced family change also had multiple sibling transitions in their households, compared with only 11 % of the children who did not experience family change. There was no difference in the likelihood of having a newborn enter the home by family structure change.

Next, Table 2 displays changes in child care dimensions by observation period. Most children (87 %) changed primary child care types over time. About one-half experienced a change between their 1-month and 6-month interviews, mostly moving from parent care into either type of informal care. About 26 % experienced changes between 6 and 12 months, and about one-third reported changes in the second and third years of life. Between 36 and 54 months, about 46 % of children changed child care type, mostly switching into formal care.

Change in child care hours was also common, with nearly two-thirds of children experiencing change in the first year, approximately three-fourths between 12 and 24 months and between 24 and 36 months, and more than 90 % between 36 and 54 months. Changes in the number of arrangements were also common, with the distribution by age mirroring changes in child care types. In other words, changes in the number of arrangements were more common among the youngest and oldest children and were modest among children between 6 and 36 months.

Overall, children were more likely to experience care instability during periods when they also experienced family structure change. For example, close to one-half of all children experienced a change in the type of care and number of care arrangements in age periods when they also experienced family structure change, compared with about 38 % of children during periods when they did not experience family structure change. Likewise, 82 % of children experienced a change in care hours during age periods when they also experienced family change, compared with 73 % of children during age periods when they did not experience family change.

Family Structure Change and Type of Child Care

The next stage of analyses explored associations between family structure change and child care type, net of the included covariates and controlling for stable effects of time-invariant confounds (including person-specific average levels of change). Model 1 in Table 3 shows that a family structure *change* increased the odds of any change in child care type by 54 %.

As for family structure *status*, children were significantly less likely to experience any change in child care type when residing in married stepparent or cohabiting biological-parent families than when they lived in other family forms. In addition, compared with when they were between 1 and 6 months old, children aged 6–12 months were less likely to experience any change in child care type, whereas children aged 36–54 months were significantly more likely to experience a change. This pattern highlights the relatively high level of change in child care arrangements among the youngest children, as many mothers moved back into the labor force after giving birth. At the same time, change in child care type among older children likely reflected their movement into formal care, including preschools. Ancillary analyses (not shown) unpacked the "any change" category into specific kinds of changes between child care types, suggesting that children experiencing family change often moved to formal and especially informal care rather than to parental care, net of all other factors.

Model 2 included interactions between family structure change and child age. The difference in child care type changes by family structure change between 6 and 12 months, an age period during which changes in care type were significantly less common overall, was greater than the corresponding difference when children were newborns (the reference in Table 2). Similarly, it was greater among 12- to 24-month-olds and 24- to 36-month-olds than among children younger than 6 months. A family structure transition, however, did not significantly affect the likelihood of a change in care type for children between ages 36 and 54 months, an age group already more likely to undergo a change in care type than children at other ages. Rotating the reference category for the interactions (i.e., testing all pairwise comparisons of the associations between family change and child care type change across age periods) revealed that the period of 6–12 months differed from the period of 36–54 months, with all other periods falling in between.

Figure 1 displays these interactions, highlighting the likelihood of experiencing a change in child care type across age periods by whether family change was experienced during the period. Although child age was clearly associated with the likelihood of experiencing a change in care type regardless of family stability, family change appeared to heighten the likelihood of experiencing a change in care type. This disparity between those who experienced family change and those who did not peaked at 6 to 12 months.

Model 3 included indicators of other family/maternal circumstances. These indicators captured cross-wave changes in income-to-needs, hours of maternal employment, other family member transitions, maternal depression, and residential mobility, as well as wave-specific indictors of income-to-needs, maternal employment, and maternal depression. Maternal depression and changes in maternal employment hours, maternal depression, and residence were significantly associated with changes in child care type. The inclusion of these factors, however, did little to explain the associations among family change, child age, and change in child care type. We also estimated a fourth model (not presented in the table) to test interactions between the family change variable and variables tapping the other family/maternal circumstances; we found almost no significant interactions. Thus, the other family/maternal circumstances explored here were unlikely to be mediators/moderators of our observed family structure change effects.

Family Structure Change and Other Child Care Dimensions

Table 4 presents the association between changes in family structure and changes in child care hours. The models followed the same sequence as the child care type models, but they were linear rather than logistic. Beginning with Model 1, a child experiencing a change in family structure had an average change of more than three hours in time in care. As for family structure status, children were significantly more likely to experience change in child

care hours when residing in a cohabiting stepparent family, net of other factors. Child age was also linked to child care quantity, with all children significantly less likely to experience change in child care hours at older ages than between ages 1 and 6 months. Taken together, these findings suggest that when children made the initial move away from parental care, they experienced sizable changes in hours of care but then only modest changes thereafter. Again, we conducted ancillary analyses to unpack this absolute change value, revealing that changes related to family structure transitions mostly reflected increased hours in care.

Model 2 added interactions between family change and child age, revealing significant age variation in observed effects on child care quantity. Experiencing family structure change (vs. stability) was associated with a sharper change in time spent in child care during the period 6–12 months than during the period 1–6 months (the reference). Similar interactions were present at older ages, although the strength of the associations diminished in magnitude. Rotating the reference category to assess all pairwise comparisons across age periods revealed that the link between family change and child care quantity change in the period 6–12 months differed from all other age periods. There were no differences, however, among the remaining age periods.

Model 3 included the full set of family/maternal circumstances. Wave-specific income-to-needs and cross-wave changes in maternal employment and residential mobility were significantly associated with changes in child care quantity, but these factors did not strongly attenuate the links among family structure change, child age, and volatility in child care hours. The final model (not presented in the table) revealed minimal significant interactions between family structure change and variables tapping other family/maternal circumstances. Again, these circumstances did not appear to mediate or moderate associations between family structure change and change in a child care dimension.

For the final analyses, Table 5 presents the results from models that predict whether there was a change in the number of nonparental child care arrangements (measured dichotomously), net of included covariates and controlling for the stable effects of time-invariant confounds. Children who experienced family change were 51 % more likely to also experience a change in their number of care arrangements (see Model 1). Controlling for family change, children in married stepparent families were less likely to experience a change in the number of arrangements. Child age was linked to changes in the number of nonparental care arrangements, with the period 6–12 months involving less change and the period 36–54 months involving more change, relative to 1–6 months.

Model 2 included the family structure change and child age interactions, again suggesting that young ages might represent critical periods. Summarizing across all pairwise comparisons (although only the model with the period 1–6-months as the reference is included in the table) revealed that the period 6–12 months stood out as having the strongest association between family change and child care change. Figure 2 displays the basic patterns of the interactions. It highlights the disparity in the likelihood of experiencing a change in number of child care arrangements between children who did and did not experience family change, with the disparity significant and largest at younger ages (ages 6–12 months and 12–24 months).

Finally, Models 3 (shown in Table 5) and 4 (not shown) included the other family/maternal circumstances as main effects and in interaction with family change, respectively. Wave-specific indicators of maternal depression and cross-wave changes in maternal employment and depression were significantly associated with likelihood of change in the number of arrangements. Yet, their additions did not affect the association between family change and

the outcome, and only one interacted significantly with family change. Thus, we found little evidence of mediation or moderation by these family/maternal circumstances.

Discussion

Early childhood is a critical period in human development (Heckman 2006; Shonkoff et al. 2009). Children undergo significant cognitive, emotional, social, and physical growth during the first five years of life, and this development sets the foundation for the full life course. Scholars have paid particular attention to family composition to understand the ways in which early development is shaped by social context. At the same time, child care has been a major focus of research on this critical period. Both streams of research suggest that fluidity in each ecological context has implications for young people's short-term and long-term prospects (Crosnoe and Cavanagh 2010). In this study, we sought to examine the interplay between changes in family structure and child care arrangements to understand whether child care, an ecological context often viewed as more amenable to policy intervention than the family itself (Scarr 1998), might be a channel through which changes in the American family have implications for the child population in the United States. Three findings emerged.

First, our analyses suggest that family structure changes were generally accompanied by changes in child care. Specifically, when parents changed partner statuses, their children were more likely to experience changes in child care type, the number of hours in care, and the multiplicity of care arrangements. These results suggest that during times of family transition, other significant changes are occurring in children's ecological contexts, including those outside the family. Whether a switch between different kinds of care or a change in total hours spent in care, these alterations in children's daily care settings may amplify the stress and uncertainty in young children's lives. Although we cannot know for sure whether changes in family structure triggered changes in child care type or whether both transitions were a function of another set of factors, these associations are compelling given that they were estimated in a statistical framework that controlled for stable characteristics of parents and children (including person-specific average levels of change). In other words, we were able to take partial steps to address the selection problems inherent in both family structure research and child care research.

Importantly, these three aspects of child care linked to family structure changes were the same aspects of child care that, in the SECCYD and other data, have tended to strongly predict children's behavior problems (NICHD ECCRN 2005). Children's behavior problems, in turn, are one of the most frequently observed negative outcomes of family instability (Cavanagh and Huston 2006). Pulling together these two sets of findings suggests how child care inconsistency may be a channel through which family instability poses risks to children and how observed child care inconsistency risks for children may also be a proxy for instability and change within families. The full sets of associations among family change, child care change, and child outcomes will need to be thoroughly explored to determine whether child care can play a role in exacerbating family-related risks or protecting against family-related risks.

Second, the association between changes in family structure and changes in multiple dimensions of child care varied by age. Specifically, changes in family structure tended to matter more to toddlers than infants or older children. Many supply-and-demand forces of child care evolve as children age, with availability increasing, costs decreasing, and preferences changing (e.g., informal versus formal; single provider versus multiple arrangements) as children exit infancy and move toward school entry (Early and Burchinal 2001; Johansen et al. 1996; Morrissey 2008). We argue that family change overlays this

more general age-related change. If child care (especially formal care) is harder to secure and afford when children are young (Clark-Stewart and Allhusen 2005; Leibowtiz et al. 2005), then a change in family structure might more seriously destabilize care, with different settings strung together or short-term disruptions in settings. This kind of instability might be powerful enough to trump parental preferences. Similarly, increasing availability and flexibility, ceiling effects on quantity at older ages, and the strong preference of parents to have older children in center care settings as a support for school readiness might reduce the overall amount of change in child care that family structure changes can trigger, leaving more room for effects when children are younger than when they are older. These patterns likely also reflect something about the family context, not just the child care market. In line with the general selection argument in family structure research (McLanahan 2004), adults who end a relationship or repartner when they have a young child may be selective of less well-organized parents, who are more apt to experience changes in multiple domains of their lives (Ryan and Claessens 2013).

As already discussed, parents' choices of and need for child care change over time and as children age, so some child care change is likely to be normative and appropriate (Blau 2001; NICHD ECCRN 2005). Yet, preference-based changes differ from general inconsistency in care. Moreover, some forms of child care changes raise more developmental concerns than others because they capture instability in a key part of children's ecologies and/or indicate transitions between care setups that have been identified as developmentally beneficial to setups that may be less so. Collectively, our main and ancillary analyses suggest that the child care arrangements associated with family structure change are more likely to be in the class of changes that raise concerns (e.g., increased hours, relying on informal care, pairing arrangements). According to past research, such fluidity can have negative implications of children's development, especially when they are infants and toddlers (Clarke-Stewart and Allhusen 2005; De Schipper et al. 2004; Morrissey 2009; Tran and Weinraub 2006; Waldfogel 2006).

Third, we considered potential mechanisms by which family structure change might be linked to child care instability. Consistent with the instability and change hypothesis, we expected residential mobility plus changes in socioeconomic resources (proxied by changes in the household income-to-needs), changes in necessity (measured by changes in maternal employment), changes in parental resources (reflected in the entries and exits of household kin and children), and changes in socioemotional functioning (tapped by changes in maternal depression) to explain and/or condition this link. Regardless of the main effects of these family/maternal circumstances on child care outcomes, they appeared to do little to mediate or moderate associations between changes in family structure and changes in child care.

This lack of mediating/moderating results could have reflected our conservative modeling strategy (which accounted for stable family and child characteristics, even unobservable confounds). They could also reflect the fact that our models were effectively estimated on the relatively small subsample of children who had experienced family changes during early childhood, leading to sparse cell sizes for interactions. Possibly, other indicators of change in the family environment might have better captured the mechanisms by which family structure changes are associated with child care change (or the conditions under which these associations arise). Although maternal depression is related to parental efficacy, other indicators that capture maternal time use or sense of control might better tap this construct. Alternatively, because the exit or entrance of a partner is typically a part of a longer-term process that begins before the actual transition (Amato 2010), our coding of change in mediators/moderators might underestimate the significance of these factors. Recall that we compared changes between the mediators/moderators, such as maternal employment, at the

same time that we measured family change. Thus, if a mother anticipating the end of her marriage or relationship changed her work schedule before her partner moved out, we would not observe this change if the actual relationship disruption happened in a later observation period. Similarly, maternal depression may be high leading up to a divorce, so any changes that occur after a transition might be modest.

Although this study examined a variety of child care measures to paint a more comprehensive picture of the association between family structure change and child care volatility, it had several limitations worth noting. First, we accounted for changes in the type of care arrangement (i.e., parental, formal, informal relative care, informal nonrelative care), but we were unable to document changes between similar settings (for example, changes from one formal care center to another formal care center). This limitation likely led to an underestimation of the true child care instability children experienced. Second, we were able to account for structural and organizational aspects of early child care related to child care quality but could not study quality directly. The SECCYD does contain observational quality ratings for child care settings, but the absence of ratings for children in some home-based care arrangements created modeling challenges. Third, whereas we used family/maternal circumstances (such as maternal employment and income) to predict changes in child care, changes in child care may actually disrupt parental employment and earnings—for example, because a child is often sick and is prohibited from attending care. We tried to account for some of this potential reciprocal association by predicting child care in the ending wave by family/maternal circumstances at the starting wave. Fourth, although our modeling strategy partially controlled for unobserved heterogeneity, we could not examine unchanging mediators or moderators, which could be relevant to between-child differences. For example, maternal education may condition the association between family change and care volatility, acting as a buffer to the threats caused by family instability. These open questions are areas for future research.

Given the importance of early child development in predicting outcomes well into adolescence and adulthood and the existing social policy levers for assisting families with child care, these findings suggest the value of discussions about additional child care assistance for these families. Although our study looked at the within-child association between family change and child care volatility, those who are most susceptible to family structure change are not random. Indeed, family instability tends to be most concentrated at the lower end of the socioeconomic distribution (and the few significant family change ´ family/maternal circumstances interactions tended to involve income). Limited child care center availability in poor neighborhoods and the nonstandard working hours that many low-income parents need to keep force families into a series of informal and unstable care arrangements (Phillips 1995; Sandstrom et al. 2012). These fragile arrangements become even more vulnerable under the stress of family change. Improving existing (and highly demanded) child care programs, such as increasing funding for the Child Care and Development Fund and extending eligibility to near-poor families, could be an important mechanism to stabilize care for children in families that are fluid.

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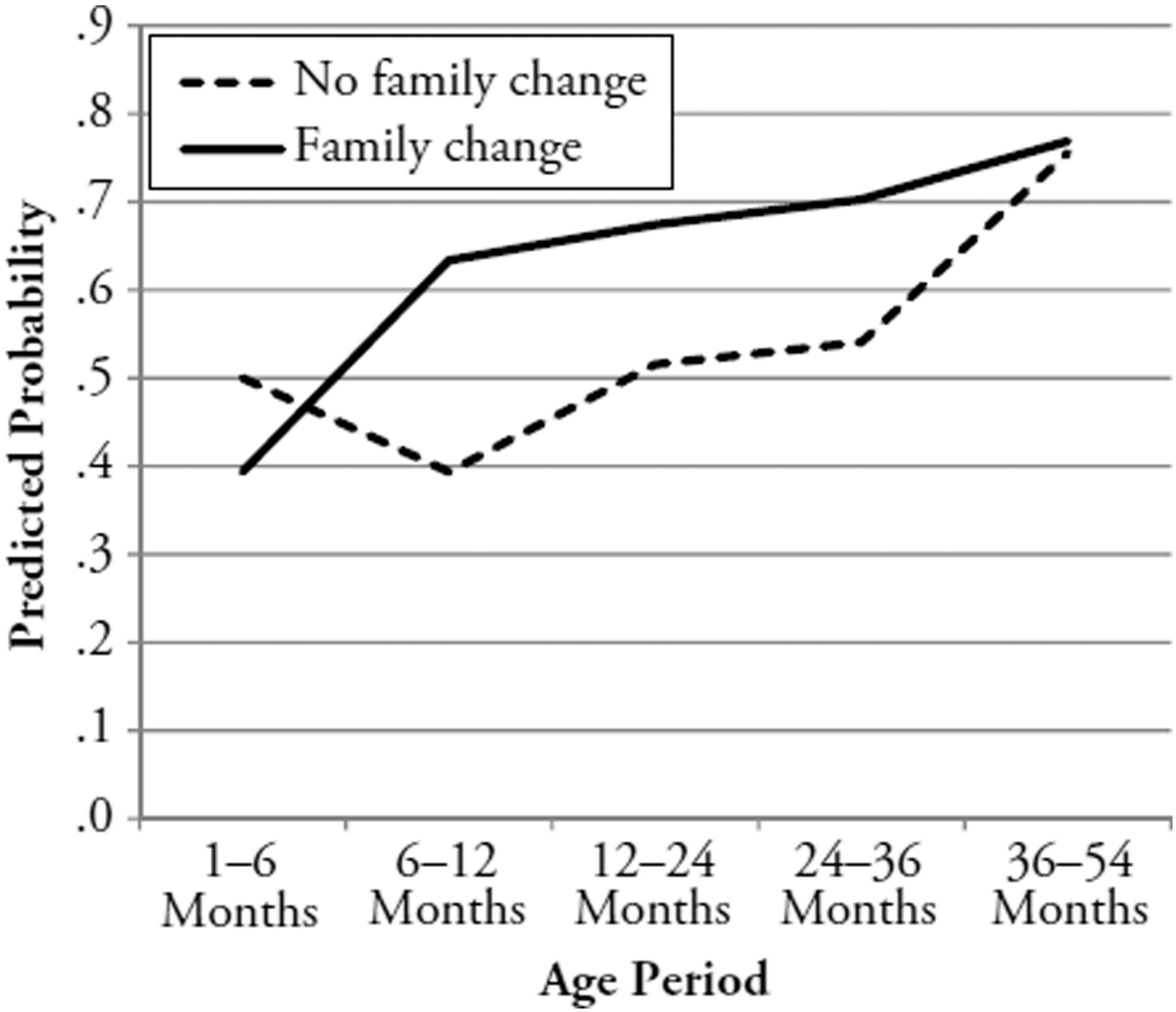

Fig. 1.
Predicted probabilities for change in child care type, by interaction of family change and child's age

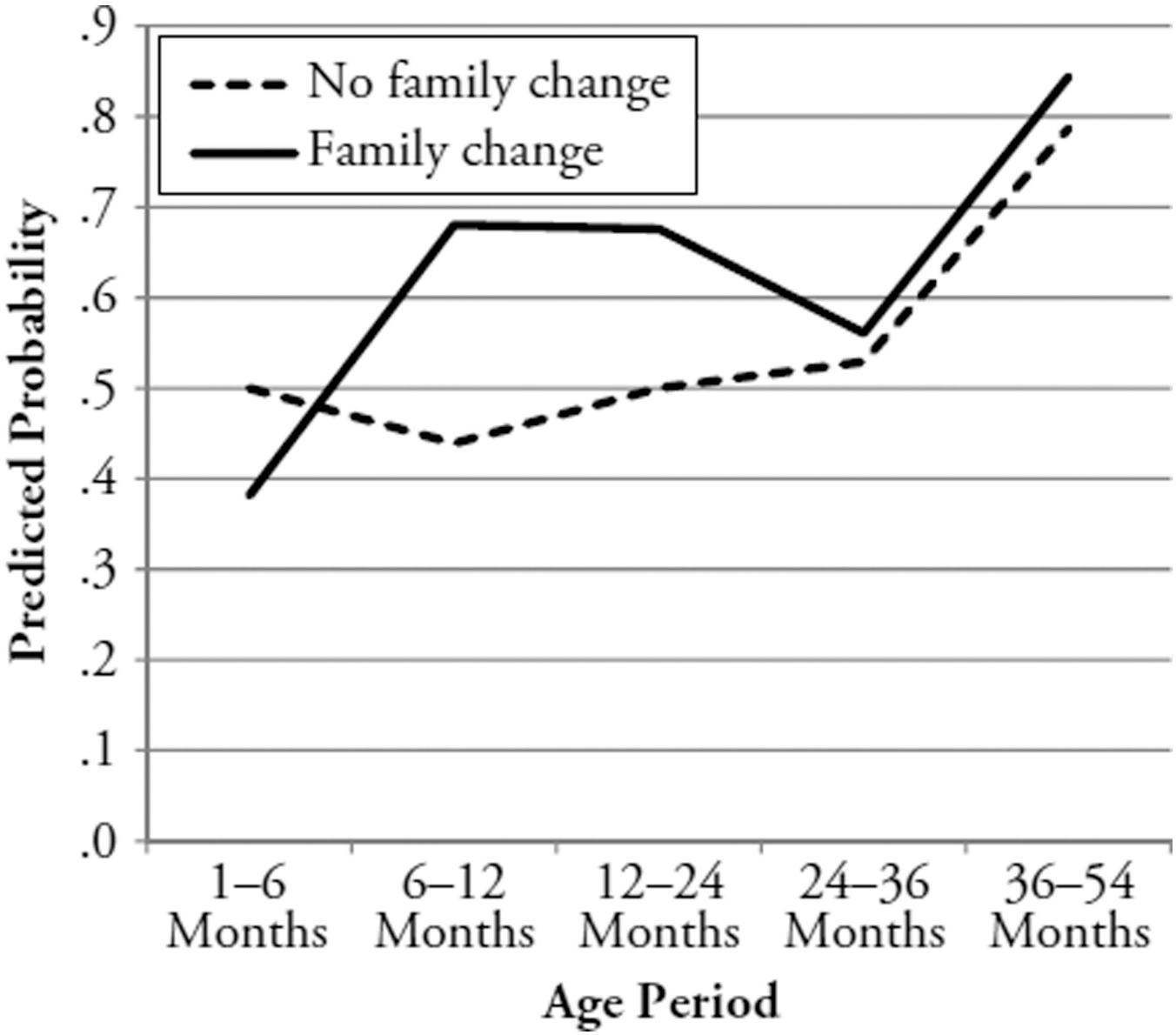

Fig. 2.
Predicted probabilities for change in number of nonparental care arrangements, by interaction of family change and child's age

Table 1

Descriptive statistics for sample, by family change (percentages)

	Total Sample	No Family Change	Any Family Change
Family Structure at Birth			
Married–biological father	77.6	85.6	45.4***
Married–stepfather	0.0	0.0	0.0
Cohabiting–biological father	7.9	4.1	23.3***
Cohabiting–nonbiological father	0.5	0.4	1.2
Single	13.9	9.9	30.2***
Change in Family Structure			
No change in family structure	80.1	100.0	0.0
1 change in family structure	13.2	0.0	66.3
2 or more changes in family structure	6.7	0.0	33.7
Poverty Status at Birth			
<100 % of the poverty line	20.0	14.8	42.2***
100 % to 185 % of the poverty line	20.0	19.1	23.9
>185 % of the poverty line	60.0	66.1	33.9***
Change in income-to-needs ratio			
No change in income-to-needs ratio	9.9	9.6	10.9
1 change in income-to-needs ratio	15.6	15.9	14.3
2 or more changes in income-to-needs ratio	74.6	74.5	74.8
Maternal Employment Status Over Study Period			
Never worked	14.2	14.7	12.0
Always part-time work	1.5	1.9	0.0*
Always full-time work	29.0	29.2	28.3
Both part-time and full-time	55.2	54.1	59.7
Change in Maternal Employment Hours			
No change in employment hours	14.6	15.2	12.0
1 change in employment hours	17.1	18.5	11.6**
2 or more changes in employment hours	68.3	66.4	76.4**
Average Depression Score at Birth	11.3	10.6	13.9***
Change in Maternal Depression			
No change in depression scale	71.3	69.1	79.8**
1 change in depression scale	24.3	25.6	19.0*
2 or more changes in depression scale	4.5	5.3	1.2**
Residential Mobility			
No change in residence	42.8	48.9	18.6***
1 change in residence	31.4	32.1	28.7
2 or more changes in residence	25.7	19.0	52.7***

	Total Sample	No Family Change	Any Family Change
Adult Kin Household Transitions			
No transitions	70.3	75.9	47.7***
1 transition	12.8	11.0	20.2***
2 or more transitions	17.0	13.2	32.2***
Sibling Household Transitions			
No transitions	64.3	51.8	33.7***
1 transition	32.0	37.2	38.0
2 or more transitions	3.7	11.0	28.3***
Entry of Newborn Siblings Into Household			
No newborn sibling entries	64.3	64.3	64.3
1 newborn sibling entry	32.0	32.0	31.8
2 or more newborn sibling entries	3.7	3.7	3.9
n	1,298	1,040	258

Notes: Change scores for income-to-needs, maternal employment, and maternal depression counted the number of times these variables changed values across waves. Chi-square tests indicated significant differences in variables between those experiencing no family change and those who did (*t*-test for testing significance in depression score).

* $p < .05$;

** $p < .01$;

*** $p < .001$

Table 2

Child care instability (percentages)

	Change in Care Type	Change in Care Hours	Change in Number of Care Arrangements
During Age Periods			
1–6 months	50.4	65.7	54.1
6–12 months	26.3	65.7	26.5
12–24 months	34.8	70.7	30.2
24–36 months	33.2	75.2	29.5
36–54 months	45.9	90.9	49.7
Ever Experience Change Over Study Period	87.3	94.0	91.3
During Age Periods Experiencing Family Change	47.3***	81.5***	46.7**
During Age Periods Experiencing No Family Change	38.0	73.2	37.4

Note: n = 1,298.

** $p < .01$;

*** $p < .001$

Table 3

Results of logistic models predicting change in child care type

	Odds Ratios (SE)		
	(1)	(2)	(3)
Family Instability			
Change in family structure	1.54** (0.24)	0.71 (0.31)	0.65 (0.30)
Family Structure (ref. = married bio parents)			
Married with stepparent	0.19* (0.13)	0.21* (0.14)	0.18* (0.12)
Cohabiting biological parents	0.53* (0.17)	0.53* (0.17)	0.51* (0.16)
Cohabiting with stepparent	0.73 (0.32)	0.78 (0.35)	0.80 (0.36)
Single mother	0.80 (0.19)	0.83 (0.20)	0.75 (0.19)
Child's Age (ref. = 1–6 months)			
6–12 months	0.60*** (0.07)	0.58*** (0.06)	0.65*** (0.08)
12–24 months	1.01 (0.11)	0.96 (0.11)	1.06 (0.13)
24–36 months	1.13 (0.13)	1.07 (0.12)	1.18 (0.15)
36–54 months	2.89* (0.35)	2.89*** (0.36)	3.09*** (0.41)
Child Care Type (ref. = parent care)			
Formal care	0.07*** (0.01)	0.07*** (0.01)	0.08*** (0.01)
Informal relative care	0.53*** (0.07)	0.52*** (0.07)	0.61*** (0.08)
Informal nonrelative care	0.30*** (0.03)	0.30*** (0.04)	0.36*** (0.04)
Interactions (ref. = no family change × 1–6 months)			
Family change × 6–12 months		3.83* (2.28)	4.10* (2.50)
Family change × 12–24 months		2.73* (1.38)	3.00* (1.56)
Family change × 24–36 months		2.75* (1.39)	3.10* (1.62)
Family change × 36–54 months		1.55 (0.79)	1.66 (0.88)
Other Family/Maternal Circumstances			
Income-to-needs ratio			0.98 (0.03)
Maternal employment hours			1.00 (0.00)
Maternal depression			0.98* (0.01)

	Odds Ratios (SE)		
	(1)	(2)	(3)
Change in Other Family/Maternal Circumstances			
Change in income-to-needs ratio			1.06* (0.02)
Change in maternal employment hours			1.01** (0.00)
Adult kin household transition			1.20 (0.16)
Sibling household transition			1.08 (0.18)
Newborn sibling entry			1.19 (0.15)
Change in maternal depression			0.98** (0.01)
Residential mobility			1.27* (0.12)
Pseudo-R^2	.16	.18	.19

Note: n(children) = 1,298 (children), = 5,889 (children × periods), 663 (children experiencing change in child care type), 2,263 (changes in child care type).

† $p < .10$;

* $p < .05$;

** $p < .01$;

*** $p < .001$

Table 4

Results of linear models predicting change in child care quantity

	Coefficients (SE)		
	(1)	(2)	(3)
Family Instability			
Change in family structure	3.22** (1.04)	−3.85 (2.95)	−4.54 (2.92)
Family Structure (ref. = married bio parents)			
Married with stepparent	−1.52 (4.09)	−1.22 (4.13)	−1.75 (4.05)
Cohabiting biological parents	−1.75 (2.10)	−2.01 (2.10)	−2.22 (2.06)
Cohabiting with stepparent	7.05* (3.03)	7.03* (3.08)	6.62* (3.02)
Single mother	−0.05 (1.59)	0.04 (1.59)	−0.69 (1.57)
Child's Age (ref. = 1–6 months)			
6–12 months	−6.79*** (0.68)	−7.81*** (0.91)	−5.21*** (0.73)
12–24 months	−5.28*** (0.70)	−5.53*** (0.72)	−3.37*** (0.76)
24–36 months	−6.19*** (0.72)	−6.51*** (0.73)	−4.55*** (0.77)
36–54 months	−1.76* (0.77)	−1.93* (0.78)	−0.33 (0.82)
Child care type (ref. = parent care)			
Formal care	−7.89*** (0.91)	−7.81*** (0.91)	−5.08*** (0.92)
Informal relative care	−3.83*** (0.92)	−3.84*** (0.92)	−1.22 (0.93)
Informal nonrelative care	−8.71 (0.78)	−8.63*** (0.78)	−5.68*** (0.80)
Interactions (ref. = no family change × 1–6 months)			
Family change × 6–12 months		16.42*** (4.01)	16.02*** (3.95)
Family change × 12–24 months		7.13* (3.44)	7.72* (3.39)
Family change × 24–36 months		7.81* (3.45)	8.15* (3.40)
Family change × 36–54 months		5.95† (3.45)	6.39† (3.42)
Other Family/Maternal Circumstances			
Income-to-needs ratio			−0.68** (0.22)
Maternal employment hours			−0.03 (0.03)
Maternal depression			−0.08 (0.06)

	Coefficients (SE)		
	(1)	(2)	(3)
Change in Other Family/Maternal Circumstances			
Change in income-to-needs ratio			−0.15 (0.15)
Change in maternal employment hours			0.15*** (0.02)
Adult kin household transition			−0.76 (0.86)
Sibling household transition			0.45 (1.02)
Newborn sibling entry			1.44† (0.82)
Change in maternal depression			−0.05 (0.04)
Residential mobility			1.44* (0.61)
Pseudo-R^2	.08	.08	.14

Notes: n = 1,298 (children). M (SD) change in child care hours = 13.5 (17.3).

† $p < .10$;

* $p < .05$;

** $p < .01$;

*** $p < .001$

Table 5

Results of logistic models predicting change in number of nonparent care arrangements

	Odds Ratios (SE)		
	(1)	(2)	(3)
Family Instability			
Change in family structure	1.51** (0.24)	0.61 (0.26)	0.62 (0.26)
Family Structure (ref. = married bio parents)			
Married with stepparent	0.17** (0.11)	0.18** (0.12)	0.16*** (0.11)
Cohabiting biological parents	0.60† (0.19)	0.56† (0.17)	0.52* (0.16)
Cohabiting with stepparent	0.73 (0.34)	0.69 (0.32)	0.69 (0.33)
Single mother	0.89 (0.22)	0.87 (0.21)	0.77 (0.20)
Child's Age (ref. = 1–6 months)			
6–12 months	0.71** (0.08)	0.67*** (0.07)	0.78* (0.09)
12–24 months	0.90 (0.10)	0.85 (0.09)	1.00 (0.12)
24–36 months	0.97 (0.11)	0.96 (0.11)	1.12 (0.14)
36–54 months	3.32*** (0.39)	3.23*** (0.39)	3.69*** (0.49)
Child Care Type (ref. = parent care)			
Formal care	0.09*** (0.01)	0.09*** (0.01)	0.11*** (0.02)
Informal relative care	0.26*** (0.04)	0.26*** (0.04)	0.31*** (0.05)
Informal nonrelative care	0.13*** (0.02)	0.13*** (0.02)	0.17*** (0.02)
Interactions (ref. = no family change × 1–6 months)			
Family change × 6–12 months		4.85** (2.81)	4.40* (2.61)
Family change × 12–24 months		3.45* (1.72)	3.38* (1.72)
Family change × 24–36 months		1.94 (0.97)	1.84 (0.95)
Family change × 36–54 months		2.43† (1.23)	2.37 (1.25)
Other Family/Maternal Circumstances			
Income-to-needs ratio			0.93† (0.03)
Maternal employment hours			1.00 (0.00)
Maternal depression			0.98** (0.01)

	Odds Ratios (SE)		
	(1)	(2)	(3)
Change in Other Family/Maternal Circumstances			
Change in income-to-needs ratio			0.99 (0.03)
Change in maternal employment hours			1.01*** (0.00)
Adult kin household transition			1.01 (0.14)
Sibling household transition			1.08 (0.18)
Newborn sibling entry			1.11 (0.15)
Change in maternal depression			0.99* (0.01)
Residential mobility			1.16 (0.11)
Pseudo-R^2	.20	.22	.24

Notes: n = 1,298. n (children) = 1,298 (children), = 6,074 (children × periods), 712 (children experiencing change in number of child care arrangements), 2,314 (changes in number of child care arrangements).

† $p < .10$;

* $p < .05$;

** $p < .01$;

*** $p < .001$