Associations between Family Structure Changes and Children's Behavior: The Moderating Effects of Timing and Marital Birth

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Abstract

The present study explores the implications of family instability for child development by investigating the conditions under which family structure changes matter most to child well-being. Using data from the Maternal and Child Supplement of the National Longitudinal Survey of Youth ($N = 3{,}492$), it estimates how changes in family structure during four different developmental periods relate to concurrent and subsequent changes in children's behavioral trajectories. We estimate associations separately for children born to married and unwed parents, or "fragile families", to determine if family instability has different effects on children across policy-relevant family types. Results indicate that changes in family structure during the first three years influence children's behavioral development more consistently than later changes, changes into a single-parent family have different implications than changes into a blended family, and changes in family structure matter more for children born to married parents than children in fragile families.

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Over the last 40 years, rates of divorce and nonmarital childbirth have risen precipitously in the U.S. (U.S. Census Bureau, 2006; Ventura, 2009). Because divorce implies a family transition (into a single-parent family and/or a blended family) and non-marital childbirths are often followed by family transitions (Osborne & McLanahan, 2007), these trends mean most children in the U.S. will experience one or more changes in family structure (Andersson, 2002; Bumpass & Lu, 2000). For this reason, recent research on family structure and child development has focused on the implications of family structure changes, specifically, for child well-being. These studies have found that experiencing a family structure change, of various kinds, predicts poorer behavioral outcomes in middle childhood and adolescence than stable family structures, of any kind (Albrecht & Teachman, 2004; Cavanagh, Crissey, & Raley, 2008; Hill, Yeung, & Duncan, 2001; Magnuson & Berger, 2009; Fomby & Cherlin, 2007; Osborne & McLanahan, 2007; Wu & Martinson, 2003). Some studies have even found that it is change in family structure, and not residence in a single-parent or blended family *per se*, that links family structure to child well-being (e.g., Wu & Martinson, 1993). Overall, this literature suggests that changes in family structure may meaningfully influence children's behavioral development.

The present study extends this literature by investigating the developmental and environmental conditions under which family structure change may matter most to child well-being. Life course theory suggests that the impact of family change on children's outcomes should depend on the timing of disruption in children's lives (Elder, 1998). Although some studies have compared the effects family change by child age, none have done so in a way that distinguishes immediate from long-term effects (Cavanagh & Huston, 2006; 2008; Hill, Yeung, & Duncan, 2001; Wu & Martinson, 1993; Wu & Thomson, 2001). Making this distinction not only captures the duration of family change effects, it also avoids inadvertently highlighting early changes, which may precede a series of stressful events throughout childhood, or later changes, which may be more proximal to the outcome measurement (Hao

& Xie, 2002; Wojtkiewicz, 1993). Using longitudinal data on children's behavior problems between birth and age 12, the present study estimates how changes in family structure at four different developmental periods relate to concurrent and subsequent changes in children's behavioral outcomes.

The life course paradigm implies that links between family change and child development should depend on the characteristics and circumstances of families. Much of the concern over family instability centers on children born to unwed parents, or "fragile families," because these children experience more instability than those born to married parents (McLanahan, Garfinkel, Mincy & Donahue, 2010; Osborne & McLanahan, 2007). This focus implies that family instability is an important mechanism linking fragile families to negative child outcomes and assumes children born into fragile families should be equally or more impacted by family changes than those born to married parents (Fomby & Cherlin, 2007). However, both research and theory suggest children in fragile families may suffer far less from family change than those born to married parents. Examining children born to married and unwed parent families separately, the present study investigates whether linking the rise in fragile families with the rise in family instability inappropriately conflates these issues as they relate to child development.

Previous Literature

Three approaches to estimating associations between changes in family structure and children's development dominate the family structure literature. The most common is to compare the outcomes of children who have experienced different types of family changes to those in two-biological parent families. Studies using this approach find that children who have experienced parental divorce have more behavioral problems, both internalizing and externalizing, than those in intact families, with effect sizes averaging between .22 and .33 (see Amato, 2001). Moving into a stepparent or blended family has similar albeit smaller and less consistent associations with child behavior (Coleman, Ganong, & Fine, 2000; Ram & Hou, 2003; Thomson, Hanson & McLanahan, 1994). Overall, these studies indicate that children who have experienced any kind of family change fare worse behaviorally than those in stable, two-biological-parent families.

Although these studies suggest family change may impact child well-being, they do not necessarily distinguish the effects of *changes* in family structure from those of living in different family *states*. Divorce may be associated with worse behavioral outcomes because losing a resident, biological father decreases families' economic resources (Dearing, McCartney, & Taylor, 2006; Votruba-Drzal, 2006) or reduces the level of nurturance and supervision children receive from their custodial parent (Hofferth & Anderson, 2003; Wu & Martinson, 1993), both mechanisms associated with a *change* in family structure. However, divorce could also be associated with worse behavioral outcomes because single parenthood, preceded by family change or not, is associated with lower household income (Thomson, Hanson, & McLanahan, 1994), lower parenting quality (Thomson et al., 1994), and less maternal time with children (Kendig & Bianchi, 2008), a change associated with the *state* of single parenthood. Similarly, living in a blended family could be associated with poorer behavioral outcomes because a new social parent reorganizes family roles and relationships in ways that are stressful to children (Cavanagh & Huston, 2008; Teachman, 2003; Wu & Martinson, 1993) or because social parents spend less time interacting with children than biological parents (Hofferth & Anderson, 2003) and may parent in less effective ways (Amato & Sobolewski, 2004; Nelson, 2004) (see Berger, Carlson, Bzostek, & Osborne, 2008 and Gibson-Davis, 2007 for exceptions). These studies, therefore, cannot determine whether family change or living outside a two-biological parent family most impacts child development.

More recent studies have distinguished the effect of family structure instability from family structure state by examining the number of family changes children experience. These studies find that experiencing multiple changes compounds the effects of a single change on behavioral outcomes (Cavanagh & Huston, 2006; 2008; Fomby & Cherlin, 2007; Magnuson & Berger, 2009; Osborne & McLanahan, 2007; Wu & Martinson, 2003). Although this approach uniquely captures the impact of family turbulence, it assumes that different types of family structure changes have comparable effects. Theoretically, however, changes from a two-biological to single-parent family should impact children's development more negatively than changes from a single-parent to blended family. In the former change, children lose a resident caregiver and breadwinner, whereas in the latter change children theoretically gain in parenting time and income. These differences may explain why the effects of movement into a blended family on child outcomes are weaker and more mixed than those for movement into a single parent family (Hao & Xie, 2002; Hill et al., 2001; Magnuson & Berger, 2009).

Both of these approaches compare children in different families. Therefore, the selection of parents into family change could bias their associations. Specifically, parent characteristics that contribute to family instability, such as poor emotional or behavioral health, low income, and interpersonal problems, may impact parents' behavior with children and children's home environments more generally, thus inducing a spurious association between family change and child well-being (Ginther & Pollack, 2004). This issue is typically addressed by controlling for a rich set of observable parent and child characteristics that may covary with family instability and child outcomes. However, no list of covariates can control for all potential confounding factors, particularly those that are difficult to observe. To account for both observable and unobservable characteristics, some studies use models in which changes in family structure predict concurrent changes in children's outcomes (Aughinbaugh, Pierret, & Rothstein, 2005; Dunifon & Kowalski-Jones, 2002; Foster & Kalil, 2007; Magnuson & Berger, 2009; Hao & Xie, 2002; Gennetian, 2005; Ram & Hou, 2003). By examining within-child effects of family structure, change models difference out time invariant child and family characteristics that could confound family structure–child outcome associations. Perhaps for this reason, these studies typically find smaller effects of family structure than between-child studies (Gennetian, 2005; Magnuson & Berger, 2009) and sometimes few significant effects at all (Foster & Kalil, 2007).

Although these models rely on changes in family structure, they are typically employed to estimate the impact of family structure *states* not family structure *changes* (Dunifon & Kowalski-Jones, 2002; Foster & Kalil, 2007; Hao & Xie, 2002; Ram & Hou, 2003). This approach assumes that the effect of moving into a family structure approximates the effect of living in that state for a longer time, an assumption the preceding literature undermines. Models that rely on family changes more accurately estimate the effects of family *change* than family *state*. Moreover, change models typically examine concurrent associations between family change and child outcomes even though family change might immediately disrupt children's home environments, and behavior as a result, but most children may subsequently recover from that disruption. Models that estimate the effects only of concurrent changes ignore this possibility. Finally, no studies using change models have allowed for separate effects by child age at the time of disruption. This omission assumes that the effects of family change are comparable across developmental periods.

The Moderating Effect of Timing of Family Change

Theoretically, the impact of family change on child behavior should depend on the child's age at the time of disruption because children are differentially vulnerable to environmental influences over time (Elder 1998). Family disruption during the first three years of life should impact children more strongly than changes later in childhood because infants and toddlers require more intensive parenting and supervision than older children (Drago, 2009; Kalil, Ryan, & Corey, 2011) and the home serves as infants' and toddlers' primary development context (Collins, Madsen, & Susman-Stillman, 2002; Shonkoff & Phillips, 2000). Children may also be most vulnerable to changes during the first three years as they undergo crucial brain development and form fundamental attachments with parents, processes that establish developmental trajectories that are mutable but increasingly difficult to change over time (Ainsworth, Blehar, Waters, & Wall 1978; Bowlby 1969; Carnegie Corporation, 1994). Although much of this research focuses on zero to three, the sensitive period in child development likely extends through the first five years (Knudsen, Heckman, Cameron, & Shonkoff, 2006; Shonkoff & Phillips, 2000).

These theories imply that infants and toddlers, and possibly preschool-aged children, might suffer more from family structure changes than children ages six to nine (middle childhood) or 10 to 12 (preadolescence). Supporting this hypothesis, Cavanagh and Huston (2008) found that family instability experienced from birth to age five predicted children's social skills in fifth grade, whereas instability experienced after age five did not. However, because they did not examine the effects of instability on early outcomes, it is unclear whether early instability altered developmental trajectories in the short term or if the effects increased over time. Early and later family structure changes might have similar contemporaneous effects on children's behavioral well-being, but early instability might trigger subsequent family stressors that accumulate during childhood and produce, by middle childhood, more negative child outcomes. It is also possible that parents who break up early in a child's life have weaker emotional and economic resources than parents who break up later in a child's life. If so, the selection of more disadvantaged families into early instability, rather than early instability per se, may account for stronger associations between early family change and child outcomes.

Different types of family change might also have unique effects on child well-being when experienced during different developmental periods. Early transitions into a single-parent family from a two-biological-parent family may be more detrimental to child well-being than the same change later in childhood because children lose crucial economic and emotional resources at a more sensitive period of development. However, early transitions into a blended family may be less stressful than the same change experienced later in childhood because family routines and relationships are less established and, thus, less disrupted by the change. Moreover, children may come to view the social parent as a more permanent father (or mother) figure if he or she enters the family when the child is young. To our knowledge, no studies have compared the effects of transitions into a social parent family at different ages or compared these effects to those of transitions into a single parent family at different ages.

The Moderating Effect of Marital Birth Status on Family Change

Much of the public and policy concern over family instability is focused on children in fragile families because children in these families experience more instability than those born to married parents (Osborne & McLanahan, 2007). However, there are three reasons to hypothesize that family changes may impact children less in fragile families than married parent families. First, because single parent and blended families are more common among fragile families (Osborne, Manning, & Smock, 2008), parents and children in fragile families may perceive changes into these structure as more normative, more predictable, and, thus, less stressful (Maier & Seligman, 1976). Second, stress theory posits that changes are less disruptive when they are accompanied by a strong support system. Mothers in fragile families are more likely to live with extended kin than married parents, even when they cohabit with the child's father, and to move in with extended kin after relationship dissolution (Sigle-Rushton & McLanahan, 2002). These kin could buffer mothers and children against the destabilizing effects of family change.

Third, the coresidence of the biological father is associated with fewer benefits to children in fragile families than children in married parent families. Specifically, studies find children of unwed cohabiting and single parents often do not differ behaviorally despite the presence of the biological father in the former family type (Aronson & Huston, 2004; Brown, 2004; Dunifon & Kowaleski-Jones, 2002). Cohabiting biological fathers contribute fewer economic resources, both in absolute levels and proportion of their income, than married biological fathers (Deleire & Kalil, 2005; Kenney, 2004). Moreover, unmarried couples experience higher conflict and more interpersonal violence in their relationships than married couples (Brown & Booth, 1996), thus ending those relationships may improve the emotional climate of the home (Amato, 2005). All three of these theories have been posited to explain why many studies find that family instability has a larger negative impact on White children than African American children (Amato & Keith, 1991; Dunifon & Kowalski-Jones, 2002; Fomby & Cherlin, 2007; Wu & Thomson, 2001); it is reasonable to hypothesize similar patterns across marital birth status.

The two previous studies that compared associations between family changes and child outcomes across marital birth status reached conflicting findings. Cavanagh and Huston (2006) found a link between number of family changes during the first six years and teacher reported behavior problems only for children born to *married* parents, but a link between transitions and disruptive behavior with peers only for children born to *unwed* parents. Osborne and McLanahan (2007) found no differences between the effects of family instability on children's behavior problems at age three in married versus unwed parent families. However, both studies examined the total number of family transitions, rather than specific types of changes, which may obscure meaningful differences that exist by type and timing of family change. Movement into a single parent family may impact children in married-parent families more negatively than those in fragile families. However, movement into blended families may be less harmful to children in married-parent families than fragile families because new partners may have higher education levels and incomes than new partners of previously unwed mothers (Garfinkel, Glei, & McLanahan, 2002). These differences may also vary by child age. Very early transitions out of cohabitation may be less harmful, and even protective, for children in fragile families because mothers may be leaving potentially difficult relationships with biological fathers, whereas early transitions for married families reflect disruptions of a presumably more established family system. However, later transitions out of two-biological parent families may be equally harmful to children across family types, assuming longer-term cohabiting relationships are more established.

Finally, married and unwed families may experience different types of family structure changes that may have unique associations with child well-being. Because all married parent families begin with two biological parents, the first change in family structure implies a divorce or separation. However, half of new unwed parents cohabit at the time of the child's birth, whereas half reside apart (McLanahan, in press). Of those who cohabit, a substantial proportion separate within two years, and of those who live apart, some decide to cohabit or marry sometime after the child's birth. Thus, some children in fragile families may never experience parental separation but may experience the transition *into* a two-biological-parent family. Many marriage promotion initiatives imply that such a change should enhance child well-being by arguing that children of unwed parents would fare better if their parents were married. Examining the effect of movement into a two biological parent family explicitly tests this assumption.

Present Study

This study investigates two research questions: (1) Do the effects of family structure changes vary by child age that the time of disruption? (2) Do the effects of family structure changes vary by parents' marital status at the time of the child's birth? We answer these questions using a longitudinal data analytic approach that distinguishes not only between family changes at four different developmental periods but also between the concurrent (short-term) and subsequent (long-term) effects of those changes. Because this approach examines how changes in family structure predict changes in child behavior, it reduces the influence of time invariant characteristics that could confound family change–child outcome associations while explicitly estimating the effects of family change. By estimating effects separately for children born to married and unwed parents, the study also tests whether children in fragile families suffer less from family change and instability than those born to married parents while capturing the different types of family changes children in each family type may experience.

Method

Data and Sample

Data were drawn from the Maternal and Child Supplement of the NLSY79. The NLSY79 is a nationally representative survey of youth who were ages 14 to 21 when interviewed in 1979 and were re-interviewed annually until 1994 and biennially thereafter. Beginning in 1986, the NLSY began following the children of the female NLSY79 respondents to assess their health, development, and overall well-being. Because the NLSY79 gathered longitudinal information on mothers' family structures, economic conditions, socioemotional well-being, and a range of other characteristics, the NLSY79 is ideally suited to investigating linkages between family environments and child developmental trajectories. Although the children of the NLSY do not constitute a nationally representative of all children in the U.S., it is larger and more diverse than samples used in some other studies on this topic. For this reason, many studies of family structure have used data from the NLSY79 (e.g., Dunifon & Kowalski-Jones, 2002; Fomby & Cherlin, 2007; Gennetian, 2005; Magnuson & Berger, 2009; Ram & Hou, 2002). None have used the data to examine the timing and duration of family change effects or how effects may vary by marital birth status.

The analytic sample constitutes children observed between birth and 12, pooled across waves from 1986 to 2008, the most recent interview wave. Data on children's behavioral outcomes were first collected when children were between 3- and 4-years-old (3/4) and again when children were between 5 and 6-years-old (5/6), 7 and 8-years-old (7/8), 9 and 10-years-old (9/10), and 11 and 12-years-old (11/12). To be included, children needed to have data on behavioral outcomes for at least three time points between those ages. The analytic sample was further restricted to families with valid data on family structure at the time of the child's birth and for each subsequent wave of data collection through age 12, although the sample was not restricted to families interviewed at each wave (see Measures for description of family structure coding), yielding a final sample of 3492 children for all outcomes.

Some cases were missing data on important covariates, such as household income at the time of the child's birth and mothers' socioemotional well-being prior to the child's birth. We followed vonHippel's (2007) recommendation to multiply impute independent but not dependent variables. Thus, missing values on all covariates, but none of the child outcomes or independent variables of interest (family structure variables), were imputed. We assumed that the data were missing at random. This assumption was strengthened by our use of a host of auxiliary variables describing the child's behaviors and home environment in our imputation models (Allison, 2009). Although we did not impute the outcomes, they were included in the models used to impute the other variables (vonHippel, 2007).

Multiple imputation was conducted using the ICE command in Stata 11.0 (Lunt, 2009; Royston, 2004; Statacorp, 2009), which is based on a regression switching protocol using chained equations. Following conventional guidelines (McCartney, Burchinal, & Bub, 2006), five imputed datasets were generated. They were analyzed using the PROC MIANALYZE command for regression analyses in SAS 9.2 (SAS Institute Inc., 2008), which combines coefficients and standard errors across imputed data sets.

Measures

Family structure. To distinguish between families married and unwed (fragile families) at the child's birth, we used mothers' reports of marital status in the child's birth year. If the mother was not interviewed in that year, data were determined by maternal reports in the subsequent interview. At each interview, mothers report current marital status, the first three changes in marital status since the last interview and the dates of the changes. If the child's birth occurred during the same calendar year as the marriage then the child was coded as being born to married parents. Of all mothers in the analytic sample, 2562 were married at the time of the child's birth and 930 were unwed.

Next, family structure changes children experienced at each age interval were identified. At each interview the NLSY collected data from the child's biological mother on whether child was living with both biological parents, the biological mother only, or the biological mother and her unrelated partner (because the NLSY follows mothers, few study children live with only biological fathers and none with outcome data at three waves). We used this information to determine at each wave whether the child was living with two biological parents, a single mother, or a blended family (a single mother and mothers' partner). Mother's were also asked about family structure changes between interview waves and dates when changes occurred. With this information, we could deduce family structure changes during intervals in which no interview occurred. Although there are a maximum of four intervals for children's behavior problems, we were able to compute family structure change variables for six intervals beginning with birth to ages 1 to 2 and then ages 1 to 2 to ages 3 to 4. These two intervals were combined into a single “early” period from birth to ages 3 to 4 to parallel our hypotheses. At each interval, we created a separate variable for the specific type of change children experienced (versus no change).

With three point-in-time family structures, there are seven possible types of changes per age interval including a change from one blended family to another. Although all of these changes are potentially interesting, cell sizes were too small to estimate the effects of some changes reliably, so we combined types to compare the most common changes, and changes of greatest interest, for each family type. For parents married at the child’s birth, these were changes from: 1) two biological parents to a single mother; 2) two biological parents or blended family to (another) blended family; 3) a single parent into a blended family; or 3) any other change (blended family to two biological parents, blended family to single mother, single mother to two biological parents). Note, because married parent families begin as two-biological parents, none moved from a single parent into a blended family during the early period. For parents unwed at the child’s birth, these were changes from: 1) two biological parents to a single mother; 2) two biological parents or blended family to another blended family; 3) a single parent to a blended family; 4) a single mother or blended family to two biological parents; and 5) any other change (blended family to single mother). Married parent families did not include a group moving to two biological parents because all married families begin in this state and reconciliations after separation were extremely rare in the sample.

Table 1 displays distributions of family change for the full sample and by marital birth status. The first set of proportions reveals differences in the frequency of any changes in family structure by marital birth group. The majority of families with marital births experienced no family structure changes over the focal child’s first 12 years (69%), whereas the majority of families with non-marital births experienced at least one change (62%). For both groups, the most common number of changes was one with very few families in either group experiencing three or more changes. Across both groups, the most common period in which to experience a family change was in the first three years of the child's life (an "early" change in the present study). For families with a marital birth, the most common types of changes during that period were movement from two biological parents to a single parent (separation/divorce) or some "other" change (7% and 5%, respectively). For families with a non-marital birth, the most common changes during this period were movement out of a two-biological and into a single-parent family (11%) or into a two-biological-parent family (12%).

Child behavior problems. Children's behavioral outcomes were assessed using maternal reports of the total scores on the Behavior Problems Index (BPI; Zill & Peterson, 1986). The BPI was created to measure the frequency, range, and type of childhood behavior problems for children age 4 and over. Many items were derived from the Achenbach Child Behavior Checklist and other child behavior scales. Responses were dichotomized to indicate the presence or absence of problem behaviors and then summed, yielding a score range of 0 to 28. Note, all analyses were also run separately for the internalizing and externalizing subscales of the BPI. However, because findings did not differ meaningfully by type of behavioral problem, scales were combined for the sake of parsimony.

Child age. Data on children's behavioral outcomes were gathered at ages 3/4, 5/ 6, 7/8, 9/10, and 11/12. Data on family structures were gathered at these age intervals as well as at birth and age 1 to 2. The first two intervals span the developmental periods of infancy and toddlerhood (birth and age 1 to 2), the third and fourth intervals span the preschool years (age 3/4 and age 5/6), the fifth and sixth intervals span middle childhood (age 7/8 and 9/10), and the seventh interval spans preadolescence (age 11/12). The dummy variables used to capture changes between these intervals in analyses are described below.

Covariates. In all analyses, we control for maternal characteristics that could influence family structure stability as well as parenting behavior and home environment measured at the time of the child's birth or earlier. These indicators include mothers' highest grade completed at child's birth, self-esteem (Rosenberg Self-Esteem Scale assessed in 1980), locus of control (Rotter, 1966) assessed in 1979, cognitive achievement (Armed Forces Qualifications Test [AFQT] score in 1980), and age at the birth of the child. We also controlled for household income in the year of the child's birth to account for overall differences in socioeconomic status. We did not control for any of these characteristics measured after the birth of the child as time-varying covariates because most could plausibly be influenced by changes in family structure and, thus, serve as mediators rather than confounds of any associations. In addition to these maternal and family characteristics, we controlled for child characteristics that are likely related to both levels and changes in behavioral outcomes. These included child race/ethnicity (indicators for Black and Hispanic with White or other omitted), low birth weight (<2500 g), first born child, and child gender.

Table 2 displays the means, standard deviations, and proportions where applicable for the behavioral outcomes over time as well as for the child and family background characteristics. These are presented for the full analytic sample (*N*=3492) and by the parent's marital status at the child's birth. Mean scores on the BPI generally decreased from ages 3/4 to 11/12. Children born to married parents had lower levels of behavior problems over time than their counterparts born to unwed parents. Of the full sample, half were boys, 21% were Hispanic and 28% were African American. Mother's on average had completed almost 13 years of education by the child's birth. Table 2 shows that children born to unwed parents are more disadvantaged than those born to married parents as measured by income, maternal education, and maternal ability (AFQT Score).

Analytic Strategy

To determine associations between changes in family structure and changes in children's behavior problems at different ages, we estimated piecewise hierarchical linear models (HLM) using SAS PROC MIXED (Dunifon, 2005; Magnuson, 2007; Raudenbush, 2001; Raudenbush & Bryk, 2002; Singer, 1998). Piecewise HLM measures time in discrete intervals between child assessments, rather than as a continuous measure, providing a uniquely flexible way to estimate effects of early and concurrent family changes separately for each age interval and identify whether effects sustain, increase, or decrease at subsequent intervals. Specifically, changes in family structure during the early and concurrent intervals are used to predict concurrent and later behavioral changes. We model four change intervals in outcomes and five change intervals in family structure (four intervals with BPI scores plus the lagged early family change interval). We use a three-level HLM because children are not only followed across time but also are nested in families (mothers can have more than one child in the sample) (Raudenbush & Bryk, 2002; Singer, 1998; Singer & Willett, 2003).

Data on behavior problems were gathered at five time points, ages 3/4, 5/6, 7/8, 9/10, and 11/12. The Level-1 model is:

(1a) $BPI_{tij} = \pi_{0ij} + \pi_{1ij}5/6_{tij} + \pi_{2ij}7/8_{tij} + \pi_{3ij}9/10_{tij} + \pi_{4ij}11/12_{tij} + e_{tij}$

In this equation, the total BPI score of child i in family j at time t are a function of the child's initial level of behavior problems at age 3/4, π_{0ij}, and a series of time-related dummy variables for each child assessment. In this formulation, $5/6_{tij}$ takes on a value of zero for the first observation and then a value of one at each subsequent observation. Thus, the change in child i's behavior problems between age 3/4 and 5/6 is π_{1ij}. Continuing with this formulation, $7/8_{tij}$ takes on the value zero for the first two observations and then the value of one at each subsequent observation, and $9/10_{tij}$ and $11/12_{tij}$ follow this pattern. Therefore, the change in child i's scores between ages 5/6 and 7/8 is π_{2ij}, the change in scores between 7/8 and 9/10 is π_{3ij}, and π_{4ij} represents the change in child i's scores between 9/10 and 11/12. This piecewise specification allows for separate slope estimates for each discrete time period. These slopes are then used in the between-subjects model (Level-2).

In the Level-2 models, children's BPI scores at age 3/4 (the Level-1 intercept) and BPI changes over the four intervals (the Level-1 slopes) are taken as outcomes. The intercept is modeled as a function of early (birth to age 3/4) family structure changes to adjust for the effect of family changes before age 3/4. For children born to married parents, the early changes are measured as three dummy variables for 1) changes from a two-biological to single-parent family, 2) changes from a two-biological (or blended family) to a blended family, or 3) some other change, with no early change as the reference. For children born to unmarried parents, early changes are measured as same the three dummy variables and 4) changes from any family structure into a two-biological parent family. The slopes are modeled as a function of early and concurrent changes in family structure. The following models apply to the marital birth sample:

(1b) $\pi_{0ij} = \beta_{00j} + \beta_{01j}(SINGLE_{0ij} – INTACT_{0\text{-}1ij}) + \beta_{02j}(BLENDED_{0ij} – 2PARENTS_{0\text{-}1ij}) + \beta_{03j}(OTHER_{0ij} – OTHER_{0\text{-}1ij}) + \beta_{04j}FAM_{0\text{-}1ij} + \beta_{05j}CHILD_{0\text{-}1ij} + \rho_{0ij}$

(1c) $\pi_{1ij} = \beta_{10j} + \beta_{11j}(SINGLE_{1ij}\text{-} INTACT_{0ij}) + \beta_{12j}(BLENDED_{1ij}\text{-} 2PARENTS_{0ij}) + \beta_{13j}(BLENDED_{1ij}\text{-} SINGLE_{0ij}) + \beta_{14j}(OTHER_{1ij}\text{-} OTHER_{0ij}) + \beta_{15j}(SINGLE_{0ij} – INTACT_{0\text{-}1ij}) + \beta_{16j}(BLENDED_{0ij} – 2PARENTS_{0\text{-}1ij}) + \beta_{17j}(OTHER_{0ij} – OTHER_{0\text{-}1ij}) + \beta_{18j}FAM_{0\text{-}1ij} + \beta_{19j}CHILD_{0\text{-}1ij} + \rho_{1ij}$

(1d) $\pi_{2ij} = \beta_{20j} + \beta_{21j}(SINGLE_{2ij}\text{-} INTACT_{1ij}) + \beta_{22j}(BLENDED_{2ij}\text{-} 2PARENTS_{1ij}) + {}_{2ij}\text{-} SINGLE_{1ij}) + \beta_{24j}(OTHER_{2ij}\text{-} OTHER_{1ij}) + \beta_{25j}(SINGLE_{0ij} – INTACT_{0\text{-}1ij}) + \beta_{26j}(BLENDED_{0ij} – 2PARENTS_{0\text{-}1ij}) + \beta_{27j}(OTHER_{0ij} – OTHER_{0\text{-}1ij}) + \beta_{28j}FAM_{0\text{-}1ij} + \beta_{29j}CHILD_{0\text{-}1ij} + \rho_{2ij\ \ldots}$

Analogous models are run for changes between ages 7/8 and 9/10 (π_{3ij}), and 9/10 and 11/ 12 (π_{4ij}).

In 1b, child i's initial BPI score, measured at age 3/4, in family j, π_{0ij}, is predicted by early family structure changes, $SINGLE_{0ij} – INTACT_{0\text{-}1ij}$ (two-biological to single-parent), $BLENDED_{0ij} – 2PARENTS_{0\text{-}1ij}$ (two-biological or blended to another blended family), $OTHER_{0ij} – OTHER_{0\text{-}1ij}$ (some other change), child, $CHILD_{0\text{-}1ij}$, and family, $FAM_{0\text{-}1ij}$, background characteristics, and an individual error term, ρ_{0ij}. Only time-invariant child (CHILD) and family (FAM) characteristics and initial family structure are included as predictors in 1b. The coefficients for early family structure changes (β_{01j}, β_{02j}, β_{03j}) estimate the mean differences in BPI scores for children who experienced each early change versus those in stable two-biological-parent families by age 3/4, controlling for child and family characteristics. All control variables are centered to the sample mean, so that the intercept indicates the initial test score for children with mean values for covariates (Raudenbush & Bryk, 2002; Singer, 1998).

Our interest is in the pattern of coefficients on growth or changes in BPI during the four intervals—π_{1i}, π_{2i}, π_{3i}, and π_{4i}—which are first modeled as a function of early and concurrent change intervals in family structure. In 1c, the change in BPI between ages 3/4 and 5/6, π_{1i}, is predicted by a concurrent change in family structure, where β_{11j} to β_{14j} reflect coefficients estimating the effects of changes from two-biological parents to a single mother, from two-biological or blended to a new blended family, from a single mother to a blended family, and all other changes, respectively, between ages 3/4 and 5/6 (versus no change in family structure), and by an early change in family structure, where β_{15j} to β_{17j} reflect the same changes in family structure (except a change from a single mother to a blended family) between birth and age 3/4. If changes in family structure co-occur with changes in behavior problems, then the concurrent terms—β_{11j} to β_{14j}—should be significant and their sign and size will indicate the nature of that concurrent effect. If change in family structure during the first three years of life predicts later changes in behavior problems, then the early terms—β_{15j} to β_{17j} in 1c—should be significant and their sign and size will indicate the nature of those lagged effects. Equations for π_{2i}, π_{3i}, and π_{4i} proceed in this way, with concurrent effects defined as the effect of family structure changes in same period as the estimated slope. By comparing the concurrent coefficients across equations, we can identify the developmental periods during which children are most impacted by a change in family structure in the short term. By comparing early change coefficients across equations, we can identify whether and when the effect of an early change emerges in childhood and whether those effects sustain, increase, or decrease over time. For instance, if an early change predicts a short-term increase in behavior problems – during the preschool years – but the early change coefficient is not significantly different from zero in subsequent periods, the effect likely sustains but does not increase over time. If the early change coefficient is significant and negative in subsequent periods, the effect likely subsides over time, and if the early change is significant and positive in subsequent equations, the effect likely increases over time.

In additional models, we examine the lagged effects of changes experienced after the early period (between ages 3/4 and 5/6, and so on). Because entering all possible lagged changes at each age slope would substantially reduce our statistical power, we entered lagged changes on subsequent age slopes only if a significant concurrent effect emerged during a change period. For instance, if change from a two-biological to single-parent family between ages 3/4 and 5/6 was associated with a significant concurrent increase in children's behavior problems, then a change from two-biological to a single parent family between ages 3/4 and 5/6 was entered at each subsequent age slope to determine whether that concurrent effect sustains, increases, or decreases over time.

Because the analytic strategy relies on predicting changes in child outcomes from changes in family structure, rather than comparing outcomes between children in different family structures, the models reduce the influence of child and family characteristics that may affect children's behavior and family structure (Raudenbush, 2001; Rutter, 2000). However, the child and family characteristics controlled at the intercept might also impact the rate at which children's behavior changes over time. To reduce this potential bias, we include family and child covariates as controls at each slope.

We ran each model twice, once with children born to married parents and once with children born to unwed parents. The latter models mirror the former except that additional change (from single to blended and from any family structure to two biological parents) are added to the intercept and slope equations. By comparing the family change coefficients across the married and unwed family models, we can assess the relative impact of family change on children outcomes across family types. We formally tested differences between these coefficients using a post-estimation t-test (Gujarati, 1995).

To account for the clustering of children in families, the slopes from the level-2 models are modeled as outcomes at level-3 model:

(1g) $\beta_{00j} = \gamma_{000} + \upsilon_{00j}$ for all β_{00j} through β_{48j}

Results

Table 3 displays results of models predicting children's BPI scores at age 3/4 and changes in BPI scores over each change interval with early and concurrent family structure changes used as level-2 predictors. Results are displayed separately for children born to married and unmarried parents. Additional models are displayed in which family structure changes that predict significant concurrent changes in behavior problems are entered as lagged predictors on subsequent age slopes.

Children born to married parents. The results for children born to married parents are displayed in the first two columns of Table 3. Children who experienced an early change from a two-biological to single-parent family or from any type of two-parent family to a new blended family had higher BPI scores at age 3/4 (the intercept) than those who experienced no early change, controlling for child and family characteristics. Children born to unwed parents did not have a corresponding elevation in behavior problems after a similar early change (t=1.88, p<.10). An early change from a two-biological to single-parent family goes on to predict increases in children's behavior problems in middle childhood (between ages 5/6 and 7/8 and between ages 7/8 and 9/10). These children recovered somewhat from those increases during preadolescence according to the significant negative slope for that early change between ages 9/10 and 11/12. By contrast, the significant negative coefficient for an early change from any type of two-parent family to a new blended family indicates that these children recovered during the preschool period from an initially higher BPI score; nonsignificant coefficients for this early change during middle childhood and preadolescence suggest they maintained that recovery throughout childhood. Although children who experienced "other" early changes did not have elevated BPI scores at age 3/4, they experienced a greater increase in behavior problems during middle childhood (between ages 5/6 and 7/8), suggesting a delayed effect. This effect decreased and then increased over time according to negative and then positive coefficients on subsequent age slopes.

Figure 1 displays these early change effects on children's behavioral trajectories from preschool to preadolescence for those born to married parents. For the no change group, the trajectory was estimated using the intercept and slope coefficients at each age interval; for the change groups, trajectories were estimated using the intercept plus the coefficients for each early change on the intercept and the slopes for early changes at each age interval. As the coefficients suggest, children who experienced early divorce or separation had higher behavior problems scores at ages 3/4 that those who experience no change and maintained that elevation over time. By preadolescence, children who had experienced early divorce or separation scored 0.27 standard deviations higher than those who experience no early change (t= 3.40, p <

.01). A similar difference emerged for children who experienced “other” early changes; by preadolescence, the “other” change group scored 0.36 standard deviations higher on the BPI than the no change group (t= 3.80, p<.01). By contrast, children who moved into a blended family early in life had initially higher BPI scores but recovered from that early elevation over time. By preadolescence, this group had scores similar to those who experienced no early change (d = 0.09; t= 0.47, p<.64).

Looking at changes experienced during the preschool period (ages 3/4 and 5/6), moving from a two-biological to single-parent family predicted a concurrent increase in children’s behavior problems. The second column of Table 3 displays results from models that include this change as a predictor of later changes in behavior problems. Positive coefficients for this change on subsequent age slopes indicate that the concurrent effect of a preschool move into a single-parent family increased over time, although not significantly at any one interval. “Other” family changes during the preschool period also elevated children’s behavior problems concurrently relative to no change, although this effect fluctuates over time, suggesting a possible recovery. Moving from a single-parent to a blended family during the preschool period was not associated with a concurrent change in children’s BPI scores.

Figure 2 displays child behavior problem trajectories from the preschool to preadolescent periods for those who experienced each type of change and no change in family structure during the preschool period. For the change groups, trajectories were estimated using the intercept for children born to married parents and the slopes for preschool changes at each age interval. For children who moved from a single-parent to blended family, or experience some “other change,” BPI scores at age 3/4 were also adjusted for an early change from a two-biological to single-parent family because that early change necessarily precedes a change from single to blended or any “other” change. Children who experienced divorce or separation during preschool showed an increase in behavior problems over time relative to those who experienced no change. By preadolescence, children who experienced preschool divorce or separation had scores 0.36 higher than those who experienced no preschool change (t=3.77, p<.01). A similar pattern emerged for “other” family changes during the preschool period, and the difference from those who experienced no change also equaled 0.36 of a standard deviation by preadolescence (t=2.61, p<.05). A move from a single-parent to a blended family during preschool was not associated with concurrent increases in behavior problems. However, we must assume those children experienced an early change from a two-biological to single-parent family. As a result, their behavior problems scores are still 0.31 of a standard deviation higher than those of children who experienced no early or preschool change by preadolescence (t=2.17, p<.05). However, this effect is attributable to early divorce or separation and not to movement into a blended family during the preschool years. Thus, moving into a blended family does not exacerbate (or ameliorate) early increases in children's behavior problems.

Some changes experienced during middle childhood predicted unexpected decreases in behavior problems. Moving from any two-parent or single-parent family into a blended family, or experiencing "other" family changes, predicted decreases children's BPI scores relative to those who experienced no change during middle childhood. In contrast, children born to unwed parents did not experience this decrease during middle childhood (t=2.40, p<.05). When each of these changes was regressed on subsequent age slopes, only children who moved from a single-parent into a blended family maintained that advantage. However, again, we must assume that these children also experienced an early (or preschool) change from a two-biological parent family into a single parent family. Once children's trajectories are adjusted for that earlier change, the advantage of moving into a blended family amounts to a recovery. By preadolescence, children who experienced this change in middle childhood had BPI scores not significantly different from those who experienced no change (d= -.20; t=1.57; p=.12). No other changes during middle childhood were associated with long-term differences in children's behavioral trajectories.

Of changes in the preadolescent period, only "other" types of family changes predicted significant increases in behavior problems during preadolescence. When we assume these children experienced an early (or preschool) change from a two-biological to single-parent family, this effect amounted to scores 0.65 standard deviations higher than those who experienced no change, a practically and statistically significant difference (*t*=5.48, *p*=.01). However, that effect is largely attributable to the effect of early divorce or separation: when we assume no prior change in family structure before an "other" change in preadolescence, the concurrent increase in behavior problems produced scores only .06 standard deviations higher than those who experienced no change, a nonsignificant difference.

Children born to unmarried parents. The intercepts for the separate models indicate that children born to unwed parents have significantly higher initial levels of behavioral problems compared to their peers born to married parents (*t*=2.93, *p*<.05). Overall, no type of family change altered children's long-term behavioral trajectories among these children. However, some early changes were associated with significant changes in children's behavior problems at subsequent age intervals, producing short-term differences in behavioral outcomes. Early changes from a two- biological to single-parent family, and "other" early changes, were associated with increases in children's behavior problems during the preschool and middle childhood periods, respectively. By age 7/8, these increases produced behavior problem scores among children in these groups that were .22 and .43 standard deviations higher, respectively, than those of children who experienced no change (*t*=1.19, *p*<.10; *t*=2.49, *p*<.05). Figure 3 displays these results for the former group. However, by age 11 to 12, children in these groups recovered and had BPI scores nearly identical to children who experienced no change (*d*= -.01, *t*=0.06, *p*=.94; *d*=.06, *t*=0.39, *p*=.70).

By contrast, changes from a single parent to a blended family or from any family structure to a two-biological parent family were associated with short-term decreases in children's behavior problems. Although an early change from a single parent to a blended family did not have a significant coefficient at any single age slope, the negative coefficients at preschool and middle childhood together produced behavior problem scores that were .24 of a standard deviation lower than those of children who experienced no change by age 7/8 (*t*=1.71, *p*<.10). The same combination of changes produced scores that were .44 of a standard deviation lower among children who moved into a two-biological parent family between birth and age 3/4 (*t*=1.71, *p*<.10) (see Figure 3). Again, by age 11/12, children in these groups had BPI scores nearly identical to children who experienced no change (*d*= .07, *t*=0.53, *p*=.60; *d*=.07, *t*=0.68, *p*=.50).

By examining children born to unmarried parents separately, we were able to explore the effect of moving into a two-biological parent family at different developmental periods on children's behavioral development. As explained above, an early change into this family structure was associated with short-term decreases in children's behavior problems but no long-term differences relative to experiencing no change (see Figure 3). The negative coefficient for a concurrent move into a two-biological parent family between age 5/6 and 7/8 suggests experiencing this change in middle childhood was also associated with a decrease in children's behavior problems. However, that decrease was not associated with a significant long-term difference in behavior problems compared to those who experienced no change (*d*=-.07; *t*=0.46; *p*=.65). We also examined the effects of specific changes during the preadolescent period on children's behavioral trajectories in fragile families. Overall, no type of family structure change experienced during preadolescence was associated with significant concurrent changes in children's behavior problems.

Discussion

The foregoing investigation of family structure changes and children's behavioral trajectories highlights the importance of timing and type of change, as well as family context, to understanding the developmental implications of family instability. Using piecewise HLMs, we found that family structure changes during the first five years of life predicted children's behavioral trajectories whereas later changes typically did not. Regarding type of family change, we found that changes from a two-biological to single-parent family increased children's behavior problems over time for children born to married parents, whereas movements into blended families generally did not. For children born to unmarried parents, only movements from a two-biological to single parent family produced short-term increases in behavior problems and no type of family change produced long-term differences. Finally, family changes of all types impacted the behavior problems of children born to married parent families more strongly and consistently than children in fragile families. This difference suggests public and policy concern over family instability within fragile families may inappropriately conflate the rise in nonmarital childbirth with family instability, at least as these trends jointly impact child development.

Our results point to the importance of family structure change in the first five years for children's behavior trajectories throughout childhood. Like Cavanagh and Huston (2008), we found only early and preschool changes in family structure consistently predicted long-term changes – albeit of various kinds – in children's trajectories. These results suggest that family disruption during the first five years of life more strongly influences children's development than changes later in childhood, a finding that supports both theory and research about the importance of early family environment – and environmental influences generally – on children's trajectories. As this literature suggests, children may indeed be most susceptible to their environments during this period (Shonkoff & Phillips, 2000). It is also possible that disruption in the family environment, specifically, influences young children most because the home constitutes young children's primary developmental context (Kalil et al., 2011). Both interpretations suggest that public and policy concern about family instability should focus on instability in the years following childbirth rather than instability in general.

The present study also demonstrates the importance of type of family change to understanding the effects of family instability. For children born to married parents, movement out of a two-biological and into a single-parent family was associated with a significant increase in behavior problems when experienced during early childhood or preschool, as hypothesized. However, movement into a blended family was not associated with long-term changes in children's behavior problems when experienced at any time point, relative to experiencing no change in family structure. Although children who moved into a blended family during the preschool period had higher behavior problem scores by preadolescence than those who experienced no change, the assumed early change from a two biological to single parent family entirely accounts for this difference. In general, this pattern of findings suggests family change harms children when economic resources and/or parenting quality and quantity are reduced and not, as social stress theory posits, when roles and routines are disrupted per se (Hetherington, 1999). Most family structure research supports social stress theory, finding that the addition of a social or stepfather into a family is linked with negative effects on children's behavioral outcomes (e.g., Magnuson & Berger, 2009; Ram & Hou, 2003). Our ability to distinguish moves into blended families by child age may explain the relative novelty of our findings. When social fathers join a family in the first three years of the child's life, children may come to view them as stable and permanent father figures rather than interlopers. The stepfather may also view himself as a stronger father figure to the child than stepfathers who enter families later on, many of whom view step-parenthood as an "incomplete institution" (Cherlin, 1978). Moreover, mothers who separate from the child's biological father and repartner so soon after the child's birth may do so because the relationship with the biological father was high in conflict, or otherwise problematic, and their relationship with the new partner far better. This kind of "trading up" in union quality may indeed benefit (or at least not harm) children's behavioral development if it improves maternal parenting quality or introduces a higher quality father figure into the child's home.

These scenarios do not explain the short-term positive effect of moving into a blended family during middle childhood on children's behavioral outcomes in married parent families. To interpret this finding, it is important to consider how our analytic approach may reveal impacts that others obscure. Typically, children in two-biological-parent families are compared to those in blended families on their level of behavior problems at a particular time. Even with rich controls, this approach allows unmeasured differences across families to bias the comparison, most likely in favor of children in intact families. Using a change model reduces this bias, potentially revealing short-term benefits of moving into blended families. It is plausible that children's behavior improves when their mothers form more harmonious relationships after a period of marital conflict or single parenthood. These effects may not produce long-term differences between children in blended versus intact families because children who experience an early divorce or separation may have higher behavior problems initially. Thus, negative coefficients in middle childhood reflect recoveries rather than advantages. This possibility highlights the importance of using approaches that reduce the influence of unobserved confounds and capture individual trajectories.

Finally, our results indicate that the impact of family change varies meaningfully across family contexts. Whereas early movement into a single-parent family was associated with significant short- and long-term increases in behavior problems for children in married parent families, the same change was associated with only short-term increases in behavior problems for children in fragile families. The deleterious impact of divorce and separation on children's behavioral outcomes in married parent families jibes with existing theories about how such a change may increase family stress, decrease economic resources, and/or decrease parenting quality and quantity. The absence of long-term deleterious effects for children in fragile families suggests that, as we hypothesized, family changes that are more normative or are buffered by a strong family support system may not undermine child development meaningfully. It is also possible that the early loss of a resident biological father impacts children in fragile families far less than those in married-parent families because unwed fathers are less capable of enhancing the home environment.

There were some changes in family structure that produced short-term *decreases* in behavior problems for children of unwed parents. Early transitions into blended or two-biological parent families, and later transitions into two-biological parent families, were associated with decreases that did, in the short-term, yield benefits relative to children who experienced no change. These short-terms effects suggest the entrance of a resident father figure (biological or social) improves a child's home environment perhaps by relieving mothers' parenting stress, increasing the household's economic resources, or providing the child with addition caregiving and nurturance. For children in fragile families, the positive effect of biological father coresidence suggests that fathers who move into the home at some point after the child is born may have more emotional or financial resources than those who leave soon after the birth. It is possible these impacts were not sustained because the family structures themselves were not sustained. That is, two-parent families formed outside the context of marriage, either biological or blended, may end before the child reaches preadolescence, thus removing whatever advantages the resident father figure contributed.

This interpretation highlights a limitation inherent in our analytic approach. Because we aimed to differentiate the effects of specific family structure changes at specific developmental periods, we could not examine the impact of multiple family changes on children's trajectories. Doing so within this analytic framework would require computing the combined effects of changes at different periods to create hypothetical family histories, which may not characterize any actual family history, or estimating effects for extremely small numbers of children. We note that few children born to married parents experienced multiple changes, which tempers our concern about this limitation for that group. Although more children born to unwed parents experienced multiple changes, the fact that individual changes in family structure had few short- and no long-term effects of children's outcomes in fragile families tempers our concern about this limitation for that family context as well.

Other limitations also reduce the scope and implications of our findings. First, the data used are observational, thus, our estimates may be influenced by omitted variables that covary with family change and children's development. We note, however, that our analytic strategy adjusts for baseline confounds and time invariant child and family characteristics more rigorously than many similar studies of family change and instability. Second, most effect sizes found here are modest. Thus, we are isolating relatively small to moderate differences in children's behavioral and achievement trajectories as the result of family change. However, because our analytic approach yields conservative estimates, we view the significant long-term effects as strong indications that family structure changes can meaningfully influence children's behavioral trajectories, at least for those born to married parents.

In summary, the present study employed a novel approach to examine the relationship between family changes and children's development, paying careful attention to the timing and type of family changes and the influence of selection bias. We provide one of the first systematic examinations of the relationship between early family structure changes and children's developmental trajectories that both accounts for concurrent family changes and offers more precise information about the nature of those effects over time. Most significantly, our findings reveal the importance of considering family context when generalizing about the negative impacts of family instability. In doing so, we highlight a potential problem in conflating the rise in fragile families with the rise in family instability, either as problems that conjointly contribute to the reproduction of poverty and socioeconomic inequality across generations, or as the mechanism linking nonmarital childbirth to less optimal child outcomes.

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Table 1

Frequencies of changes at each age interval for full sample and by marital status at birth

	Proportion		
	Full Sample	**Married**	**Unmarried**
Over all Periods			
No Change	0.60	0.69	0.38
One Change	0.20	0.18	0.25
Two Changes	0.13	0.09	0.21
Three Change	0.05	0.03	0.11
Four Changes	0.02	0.01	0.03
Five Changes	0.00	0.00	0.01
Six Changes	0.00	0.00	0.00
One or more	0.40	0.31	0.62
Two or more	0.20	0.14	0.37
Age Birth-03/04			
Any Change	0.19	0.12	0.37
Two Bio to Single	0.08	0.07	0.11
Two Biological/Step to Blended	0.01	0.01	0.02
Single to Blended	0.07	-	0.07
Any FS to Two Biological	0.12	-	0.12
Other (married)	0.05	0.05	-
Other (unmarried)	0.05	-	0.05
Age 03/04-05/06			
Any Change	0.12	0.09	0.20
Two Bio to Single	0.05	0.05	0.07
Two Biological/Step to Blended	0.01	0.01	0.02
Single to Blended	0.03	0.02	0.05
Any FS to Two Biological	0.05	-	0.05
Other (married)	0.02	0.02	-
Other (unmarried)	0.03	-	0.03
Age 05/06-07/08			

Any Change	0.11	0.08	0.20
Two Bio to Single	0.04	0.04	0.05
Two Biological/Step to Blended	0.01	0.01	0.03
Single to Blended	0.03	0.02	0.05
Any FS to Two Biological	0.05	-	0.05
Other (married)	0.01	0.01	-
Other (unmarried)	0.04	-	0.04
Age 07/08-09/10			
Any Change	0.11	0.09	0.18
Two Bio to Single	0.04	0.04	0.04
Two Biological/Step to Blended	0.01	0.01	0.02
Single to Blended	0.03	0.02	0.05
Any FS to Two Biological	0.04	-	0.04
Other (married)	0.02	0.02	-
Other (unmarried)	0.03	-	0.03
Age 09/10-11/12			
Any Change	0.13	0.11	0.18
Two Bio to Single	0.03	0.03	0.04
Two Biological/Step to Blended	0.03	0.03	0.02
Single to Blended	0.03	0.02	0.04
Any FS to Two Biological	0.04	-	0.04
Other (married)	0.03	0.03	-
Other (unmarried)	0.04	-	0.04
n=	3492	2562	930

Table 2

Descriptive statistics for background characteristics and behavioral outcomes by parents' marital status at child's birth

	Full Sample		Marital Birth		Non-Marital Birth	
	Mean	SD	Mean	SD	Mean	SD
BPI Score						
Age 3/4	8.31	5.35	7.89	5.18	9.51	5.65
Age 5/6	8.13	5.70	7.67	5.45	9.43	6.18
Age 7/8	8.26	6.08	7.82	5.86	9.51	6.51
Age 9/10	8.18	6.28	7.72	5.98	9.50	6.87
Age 11/12	7.57	6.03	7.09	5.67	8.91	6.77
Child Characteristics						
Race/ethnicity						
White	0.51		0.62		0.21	
Hispanic	0.21		0.21		0.19	
Black	0.28		0.17		0.59	
Male	0.51		0.51		0.51	
Low Birthweight	0.08		0.06		0.13	
First Born	0.33		0.34		0.28	
Born to Married Parents	0.27		1.00		0.00	
Maternal and Family Characteristics						
Mother's Highest Grade Completed	12.93	2.31	13.27	2.34	11.97	1.94
Mother's Age at Child's Birth	27.58	3.38	27.81	3.26	26.94	3.63
Maternal Locus of Control	8.78	2.39	8.56	2.40	9.37	2.25
Maternal Self Esteem	22.00	4.10	22.33	3.99	21.09	4.27
Maternal AFQT	39.60	28.33	45.94	28.24	22.16	20.06
Household Income in Birth Year	35615.43	61372.10	43314.86	69610.29	14417.17	13540.20
n=	3,492		2,562		930	

Table 3

Growth in behavior problems from early childhood to preadolescence predicted by initial level and specific changes in family structure

	Marital Birth						Non-Marital Birth					
Initial BPI Score Intercept	7.89	0.20	***	7.88	0.20	***	9.36	0.56	***	9.63	0.56	***
Type of Early Change												
Two Biological to Single	1.77	0.63	**	1.77	0.63	**	-0.45	0.99		-0.44	0.98	
Two Biological/Step to Blended	2.77	1.54	+	2.76	1.54	+	-0.23	2.18		-0.17	2.18	
Single to Blended	--	--		--	--		-0.71	1.97		-0.69	1.96	
Any FS to Two Biological	--	--		--	--		1.20	1.81		1.25	1.81	
Other Change	0.13	0.82		0.15	0.82		-1.55	1.65		-1.58	1.64	
<u>Slope Age 3/4 to 5/6</u>												
Average Score Change	-0.13	0.20		-0.11	0.20		-1.05	0.51	*	-1.04	0.51	*
Two Biological to Single												
Early Family Change	-0.82	0.62		-0.92	0.62		0.54	1.03		0.52	1.03	
Family Change 3/4 to 5/6	1.24	0.41	**	0.84	0.47	+	-0.02	0.71		-0.04	0.71	
Two Biological/Step to Blended												
Early Family Change	-2.84	1.50	+	-3.25	1.51	*	0.00	2.27		-0.06	2.27	
Family Change 3/4 to 5/6	-0.15	0.96		-0.13	0.96		0.41	1.33		0.35	1.33	
Single to Blended												
Early Family Change	--	--		--	--		-0.58	2.05		-0.60	2.04	
Family Change 3/4 to 5/6	0.01	0.65		-0.02	0.65		-1.12	0.81		-1.14	0.81	

Any FS to Two Biological												
Early Family Change	--	--		--	--		-2.76	1.88		-2.80	1.88	
Family Change 3/4 to 5/6	--	--		--	--		-0.72	1.25		-0.69	1.25	
Other Change												
Early Family Change	0.58	0.82		0.42	0.82		3.23	1.71	+	3.26	1.71	+
Family Change 3/4 to 5/6	1.53	0.66	*	2.46	0.75	**	0.38	1.03		0.38	1.03	
<u>Slope Age 5/6 to 7/8</u>												
Average Score Change	-0.03	0.11		-0.04	0.12		0.01	0.32		0.03	0.32	
Two Biological to Single												
Early Family Change	0.83	0.40	*	0.98	0.41	*	1.17	0.66	+	1.24	0.66	+
Family Change 3/4 to 5/6				0.39	0.47		--	--		--	--	
Family Change 5/6 to 7/8	0.62	0.38		0.73	0.38		0.30	0.73		0.26	0.73	
Two Biological/Step to Blended												
Early Family Change	0.61	0.93		1.37	0.98		0.77	1.44		0.96	1.44	
Family Change 5/6 to 7/8	-1.18	0.75		-1.83	0.91	*	-0.48	0.98		-0.49	0.98	
Single to Blended												
Early Family Change	--	--	--				-0.25	1.20		-0.18	1.20	
Family Change 5/6 to 7/8	-1.11	0.49	*	-0.64	0.62		0.58	0.68		0.57	0.68	
Any FS to Two Biological												
Early Family Change	--	--	--	--	--		-1.05	1.10		-1.05	1.10	
Family Change 5/6 to 7/8	--	--	--	--	--		-1.81	1.04	+	-2.24	1.24	+
Other Change												
Early Family Change	1.11	0.47	*	1.36	0.48	**	0.88	0.97		0.91	0.97	
Family Change 3/4 to 5/6				-1.78	0.72	*	--	--		--	--	

Family Change 5/6 to 7/8	-1.41	0.63	*	-1.98	0.76	**	1.42	0.81	+	1.03	0.99	
Slope Age 7/8 to 9/10												
Average Score Change	-0.09	0.12		-0.11	0.12		-0.15	0.32		-0.17	0.32	
Two Biological to Single												
Early Family Change	0.77	0.41	+	0.76	0.43	+	-0.05	0.65		-0.17	0.66	
Family Change 3/4 to 5/6				0.13	0.49		--	--		--	--	
Family Change 7/8 to 9/10	-0.16	0.40		-0.14	0.40		0.68	0.78		0.09	0.85	
Two Biological/Step to Blended												
Early Family Change	-0.72	0.97		-1.30	1.03		-0.10	1.39		-0.37	1.40	
Family Change 5/6 to 7/8				1.03	1.01		--	--		--	--	
Family Change 7/8 to 9/10	-0.67	0.81		-0.80	0.81		0.61	1.09		0.25	1.11	
Single to Blended												
Early Family Change				--	--	--	1.15	1.16		0.96	1.18	
Family Change 5/6 to 7/8				-0.74	0.70		--	--		--	--	
Family Change 7/8 to 9/10				-0.62	0.53		0.23	0.68		0.20	0.68	
Any FS to Two Biological												
Early Family Change	--	--	--	--	--		1.81	1.07	+	1.82	1.07	+
Family Change 5/6 to 7/8										0.38	1.44	
Family Change 7/8 to 9/10	--	--	--	--	--		-1.76	1.20	+	-1.79	1.27	
Other Change												
Early Family Change	-0.77	0.48		-0.92	0.50	+	-1.17	0.94		-1.21	0.94	
Family Change 3/4 to 5/6				1.54	0.75	*	--	--		--	--	
Family Change 5/6 to 7/8				0.23	0.85					1.03	1.12	
Family Change 7/8 to 9/10	0.23	0.50		0.15	0.51		0.88	0.89		0.95	0.89	

Slope Age 9/10 to 11/12												
Average Score Change	-0.58	0.12	***	-0.61	0.12	***	-0.17	0.32		-0.18	0.32	
Two Biological to Single												
Early Family Change	-1.26	0.41	**	-1.03	0.42	*	-1.19	0.64	+	-1.20	0.65	+
Family Change 3/4 to 5/6				0.65	0.49		--	--		--	--	
Family Change 9/10 to 11/12	0.13	0.47		0.15	0.47		-0.59	0.96		-0.70	1.04	
Two Biological/Step to Blended												
Early Family Change	0.07	0.95		0.93	1.00		-1.38	1.35		-1.48	1.37	
Family Change 5/6 to 7/8				0.60	1.01		--	--		--	--	
Family Change 9/10 to 11/12	-0.46	0.46		-0.44	0.46		-0.31	1.14		-0.46	1.17	
Single to Blended												
Early Family Change	--	--	--	--	--		-0.24	1.17		-0.15	1.19	
Family Change 5/6 to 7/8				-0.63	0.67		--	--		--	--	
Family Change 9/10 to 11/12	0.18	0.61		-0.03	0.61		0.43	0.84		0.53	0.85	
Any FS to Two Biological							--	--		--	--	
Early Family Change	--	--	--	--	--	--	1.27	1.07		1.25	1.07	
Family Change 5/6 to 7/8										1.41	1.38	
Family Change 7/8 to 9/10										0.05	1.20	
Family Change 9/10 to 11/12	--	--	--	--	--	--	-1.68	1.27		-1.65	1.28	
Other Change												
Early Family Change	0.73	0.48		1.03	0.50	*	-0.98	0.93		-0.98	0.94	
Family Change 3/4 to 5/6				-1.97	0.73	**	--	--		--	--	
Family Change 5/6 to 7/8				1.10	0.83					-0.72	1.10	
Family Change 9/10 to 11/12	1.10	0.52	*	1.12	0.53	*	0.45	0.98		0.53	0.98	

Note. $N = 2562$ for married at birth; $N = 930$ for unwed at birth. Coefficients are presented with standard errors adjacent. Control variables at the intercept and each time slope include mothers' age at the time of the child's birth, years of education, mothers' self esteem, locus of control, and cognitive ability, family income in year of child's birth, child gender, race/ethnicity, first born status and low birth weight.

***$p<.001$; **$p<.01$; *$p<.05$; +$p<.10$.

Figure 1. BPI Trajectories Ages 3/4 to 11/12 by Early Changes in Family Structure for Marital Births

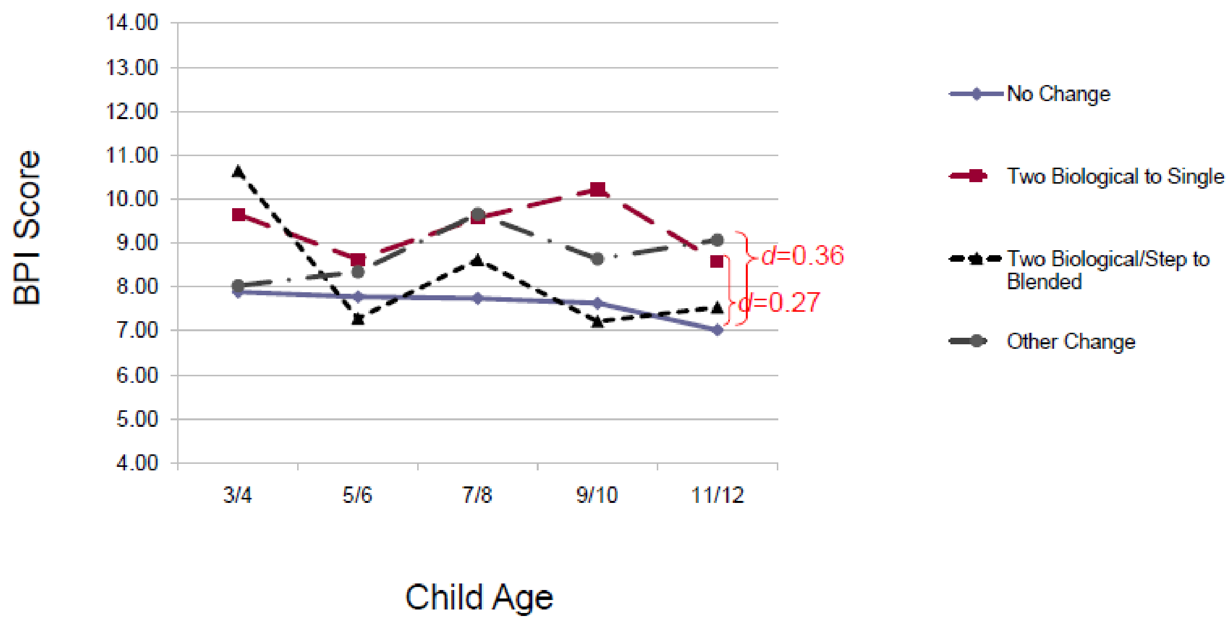

Figure 2. BPI Trajectories Ages 3/4 to 11/12 by Preschool Changes in Family Structure for Marital Births

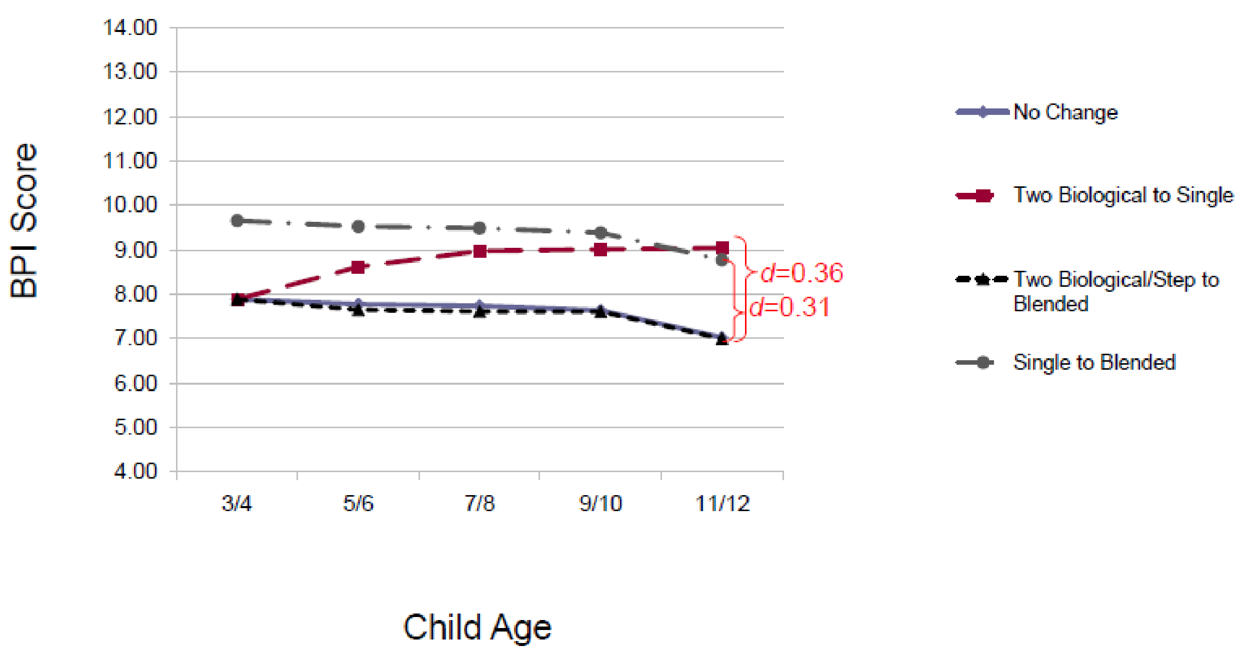

Figure 3. BPI Trajectories Ages 3/4 to 11/12 by Early Changes in Family Structure for Nonmarital Births