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Family Complexity and Child Behavior

## **Family Complexity and Children's Behavior Problems over Two U.S. Cohorts**

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## Family Complexity and Children's Behavior Problems over Two U.S. Cohorts

**Objective.** We consider the prevalence of family complexity and its association with children's externalizing behavior problems over children's life course and over historical time.

**Background.** A growing literature has demonstrated the prevalence and multidimensional nature of family complexity and its association with child behavior. The nature/strength of this association may have changed in recent cohorts as family complexity has become more common.

**Method.** Data are from the 1997 and 2014 cohorts of the Panel Study of Income Dynamics Child Development Supplement. Samples represent U.S. children ages 0-12 years born since 1985 (N=5,030). Ordinary least squares regression estimated change in the association between family complexity and behavior between cohorts. Difference-in-difference models estimated baseline and longitudinal differences in children's behavior as linked to family complexity.

**Results.** The prevalence of family complexity has stabilized over the last two decades, and the antecedents to parental repartnering and complex sibship organization remain similar. The expectation that increasing family complexity contributes to elevated behavior problem scores was not supported. Instead, children who eventually acquired a step- or half-sibling or who experienced parents' union dissolution had elevated behavior problems prior to those changes.

**Conclusion.** The prevalence of and precursors to complex family organization were stable across recent child cohorts. The observed association between family complexity and child behavior problems may be attributable to selection mechanisms linked to both parents' family formation trajectories and to children's behavior, rather than to family change itself.

Keywords: family structure; living arrangements; child development.

## **Family Complexity and Children's Behavior Problems over Two U.S. Cohorts**

Family demographers have increasingly recognized the growing complexity of American families, as many unions with children today will dissolve, and parents will go on to repartner and potentially have additional children with new partners (Brown, Stykes, & Manning, 2016; Bzostek, McLanahan, & Carlson, 2012; Guzzo, 2014a). From the perspective of children, parents' union dissolution, repartnering and subsequent childbearing introduces multiple sources of family complexity, including parents living in separate households; the presence of a parent's new romantic partner who may also take on the role of stepparent or social parent; half-siblings born into parents' new or prior unions; and stepsiblings who were born in the new partner's former union (Fomby & Osborne, 2017).

Change in parents' union status and change in children's sibship composition are likely to co-occur in the context of family complexity, as parents' sequential unions may lead to the birth of new children or the integration of children from prior unions into the household. Yet the literatures on how these circumstances each influence child well-being have developed mostly in parallel; to date, only a small body of work has documented their conjoint associations with child outcomes including socioemotional development, cognitive achievement, and academic performance (Fomby, Goode, & Mollborn, 2016; Gatins, Kinlaw, & Dunlap, 2014; Gennetian, 2005; Halpern-Meehin & Tach, 2008; Strow & Strow, 2008). Although informative, the extant work that considers parental union status and sibling composition simultaneously is based on cohort studies that have typically considered children's behavior at a single age or life stage or

has examined older cohorts that may not have been subject to the same family structure regimes in force today. Further, much of this work had limited capacity to account for parental background prior to union formation, typically relying upon retrospective reports about earlier characteristics.

To address these limitations, we consider how mother's union status and children's sibling composition are associated with children's externalizing behavior problems in two U.S. nationally-representative cohorts of children drawn from the 1997 and 2014 cohorts of the Panel Study of Income Dynamics (PSID) Child Development Supplement. We focus on externalizing behavior problems because this outcome is robustly associated with family structure in prior work (McLanahan, Tach, & Schneider, 2013) and represents an important aspect of non-cognitive skills that are linked with long-term success and attainment (Jones, Greenberg, & Crowley, 2015). We address three research questions: First, how has the prevalence of family complexity (with regard to parental union status and sibship composition) changed over recent historical time? Second, how is family complexity associated with children's behavioral problems in the two cohorts, and has family complexity become more or less strongly linked with child behavior over time (as the selectivity into particular family experiences may have changed)? Third, to what extent is *change* in family structure and complexity associated with *change* in behavioral problems during childhood?

In the main, our results suggest that the prevalence and composition of complex family organization has mostly stabilized over the last two decades. Further, the correlates of parental

repartnering and complex sibship organization remain similar across the period. Using a difference-in-difference approach, we do not find support for a causal argument that increasing family complexity contributes to children's elevated behavior problem scores. Rather, we find evidence that children who experience complex sibling formation or a married or cohabiting mother's eventual union status change (union dissolution or repartnering) had elevated behavior problems at baseline, suggesting that selection mechanisms may contribute both to parents' family formation trajectories and to children's behavior problems. This finding is in contrast to some prior research that has found evidence for a causal role of family change in shaping children's behavior problems. Children whose caregivers were unpartnered at baseline had comparable externalizing behavior scores at baseline and five years later regardless of whether their mother repartnered; also, children's behavioral scores were similar regardless of whether they gained a new half or step sibling over the time period.

## BACKGROUND

### *Change and Stability in the Prevalence of Family Complexity*

Since the 1980s, family demographers have built a robust literature considering the prevalence, determinants, and consequences of family structure change, particularly with regard to changes in union status through divorce (Amato, 2010), remarriage (Sweeney, 2010), and cohabitation formation and dissolution (Manning, 2015; Manning, Smock, & Majumdar, 2004). At least until the early 2000s, this research documented steadily increasing levels of family instability during the preceding half-century. This body of research also emphasized a growing

social class divide in family formation, with cohabiting unions becoming an increasingly frequent context for childbearing among adults lacking a four-year college degree and delayed childbearing with a single partner in marriage becoming a family formation pattern concentrated among college-educated adults (McLanahan, 2004; McLanahan & Jacobsen, 2015).

Yet recent evidence suggests that the incidence of family structure changes that culminate in family complexity may have plateaued or begun to decline. Cohabitation has become the modal first union for young adults (Manning, 2013) and, although still a relatively unstable family structure compared to marriage (Guzzo, 2014b), cohabiting unions now last on average 50 percent longer than those formed a generation ago (Lamidi, Manning, & Brown, 2019). Cohabiting unions that transition to marriage after the birth of a child are now no more likely to end in divorce than are marriages that preceded a birth (Musick & Michelmore, 2015), and divorce rates have declined overall among contemporary young cohorts compared to same-aged peers in earlier periods during the preceding three decades (Kennedy & Ruggles, 2014). Remarriage rates also declined during the past decade (Payne, 2018). Finally, the fraction of births that occur outside of marriage has plateaued in recent years at about 40 percent of all births (Martin, Hamilton, Osterman, Driscoll, & Drake, 2018), and multipartner fertility has begun to decline, in part because of reductions in teen births (Cancian, Meyer, & Cook, 2017).

Collectively, these changes suggest that children's exposure to repeated family structure change and family complexity has begun to stabilize. Indeed, using data from the 1996 and 2008 cycles of the Survey of Income and Program Participation, Manning and colleagues (2014) found

that the share of children living in complex family arrangements – as defined by parents' union status and children's relatedness to parents and siblings – mostly held steady over that period. Over roughly the same period (1995 to 2006-10), the share of children age 0-12 born to married or cohabiting parents who experienced changes in family structure remained about the same. Only children born to unpartnered mothers experienced more frequent family structure instability in the 2000s compared to the 1990s (Manning et al. 2014b).

Together, this work suggests that the transition toward a family structure regime characterized by a diversity of family types has taken root, but is no longer accelerating. Consequently, children's experiences of family composition and family structure change may be similar to what the preceding generation experienced. To the extent that family complexity has become a normative part of many U.S. children's experience of family structure, we might expect that the association between family complexity and children's externalizing behavior would be weaker in more recent compared to earlier cohorts if family systems and the institutions that families interact with have adapted to enable parents and children to more effectively manage multiple and complex contingent relationships (Hadfield, Ungar, & Nixon, 2018). We assess whether the pattern of emergent stability over the last twenty years documented in cross-sectional and shorter-run panel studies is also evident in a longer-running household panel study considered from the perspective of minor children.

#### *Selectivity into Family Complexity*

At least through the early 2000s, parents' entry into complex family organization occurred selectively. That is, adults from economically-disadvantaged backgrounds or with relatively low educational attainment or unstable employment were more likely than their otherwise similar peers to become parents early, and often in the context of a cohabiting union or nonresidential romantic relationship (Edin & Kefalas, 2005; Furstenberg, 2014; McLanahan, 2004). These circumstances in turn were associated with parents' lower rates of eventual marriage (Carlson, McLanahan, & England, 2004) and higher rates of union dissolution, repartnering, and multipartner fertility (Cancian, Meyer, & Cook, 2011) compared to peers who attained higher educational attainment or greater employment stability.

This selectivity into family complexity has been considered as an alternative explanation to the expectation that there is a causal link between family complexity and children's externalizing behavior. In the main, this work suggests that parents' background characteristics explain part of this relationship, but marriage dissolution and the addition of half- or step-siblings to a child's household remain positively and significantly associated with children's behavior problems net of family background. Family complexity arising out of nonmarital fertility has a weaker or nonsignificant association with children's behavior problems (Bzostek & Berger, 2017; Fomby et al., 2016; Fomby & Osborne, 2017; Lee & McLanahan, 2015).

We assess whether selectivity has persisted, diminished, or become more pronounced over time by focusing on a range of parental characteristics that may predict entry into family configurations. Arguably, family complexity may have become less selective over time as



cohabitation has become the modal type of first union (Manning and Stykes 2015) and as the share of children born into cohabiting unions continued to increase before stabilizing at about one-fifth of all U.S. births (Wu, 2017). Yet recent scholarship continues to emphasize that family organization is bifurcated along social class lines defined by educational attainment, employment stability, and earnings (e.g., see Amato, Booth, McHale, & Van Hook, 2015). Thus, even as family complexity has become more frequent, it may continue to be selective of adults in particular class locations as a consequence of increasingly entrenched social inequality. Here we consider whether the strength of the association between family complexity and child behavior has changed between cohorts and ask whether any such change is attributable to change in the characteristics of parents who form complex families.

#### *Family Complexity and Child Behavior*

Growth in family composition change has spurred a substantial body of research documenting its robust association with children's behavior problems, including elevated levels of externalizing behavior problems and delinquency and lower prosocial behavior compared to children who remain in the same family structure throughout childhood, net of a host of demographic and family socioeconomic characteristics (Fomby and Osborne 2017, Lee and McLanahan 2015, McLanahan et al. 2013). A variety of mechanisms have been shown to drive the association between family change and children's behavior, including heightened family stress both before and after a disruption to family structure through divorce/separation, repartnering, or a new birth (Cherlin et al., 1991); role ambiguity among family members who

may cross household boundaries and share varying degrees of relatedness (Stewart, 2005; Tach, Mincy, & Edin, 2010); and parental absence from a child's household, which may diminish both parental involvement with children and financial support (McLanahan et al., 2013; Thomson & McLanahan, 2012). Further, a portion of the observed association may be spurious and attributable to parents' antecedent attributes or circumstances that contributed both to their own complex family formation and to their children's risk of experiencing elevated behavior problems (Furstenberg, 2014).

Much of this research has focused on family composition change through union dissolution and parental repartnering by children's biological or coresident parents, most often by children's mothers. But another growing body of work has emphasized sibship composition as a central feature of family complexity that may be related independently to children's compromised behavior and academic achievement (Fomby et al., 2016; Gatins et al., 2014; Gennetian, 2005; Halpern-Meekin & Tach, 2008; Harcourt, Adler-Baeder, Erath, & Pettit, 2013; Mostafa, Gambaro, & Joshi, 2018; Strow & Strow, 2008; Tillman, 2008).

This research has highlighted the extent to which complex sibship is concealed when considered only through the lens of children's experience of parental family structure as measured by general household surveys. For example, less than 5 percent of children in U.S. households are identified as being a stepchild of the householder in Current Population Survey data (Kreider & Lofquist, 2014). But using more detailed data from the Survey and Program Participation (SIPP) about sibling composition, Manning and colleagues (2014) estimated that

approximately one in eight U.S. children co-resided with a half- or step-sibling in 2009, and nearly two-thirds of this complex sibship occurred where children were living with their own biological parents or with an unpartnered parent. In other words, sibship complexity is not fully captured by measures of mothers' or parents' union statuses or histories. Relatedly, using data from the revised 2014 Survey of Income and Program Participation that included a direct measure of whether adults had children by multiple partners, Monte (2019) reported that in nearly one-quarter of married-parent families with minor children and over 40 percent of cohabiting-parent families, at least one partner also had children with a former partner, and those children frequently resided elsewhere. This work highlights the extent to which half-sibling relationships, in addition to more frequently-studied stepsibling relationships, contribute to the prevalence of family complexity.

More nuanced research on complex sibship has also drawn upon a variety of theoretical perspectives that are distinct from those pertaining to parental union status to identify mechanisms that explain variation in child outcomes by sibship composition (for a comprehensive review, see Sanner, Russell, Coleman, & Ganong, 2018). These include the dilution of economic resources in larger compared to smaller families (Fomby et al., 2016); evolutionary biology, which suggests that parents will invest more in biologically-related offspring (Emlen, 1995); social learning theories pertaining to behaviors younger children learn from older half- and step-siblings (McHale, Bissell, & Kim, 2009); and theories pertaining to the incomplete institutionalization of complex sibling relationships (Cherlin, 1978), where siblings

and parents lack norms regarding expectations of closeness and reciprocity between children and between parents in a complex family system, with consequences for perceived stress and mental health (Fomby, 2016; Guzzo, Hemez, Anderson, Manning, & Brown, 2018; Turney & Carlson, 2011). Collectively, these theories posit that complex sibship influences children's well-being through contingent and potentially contested relationships with age peers through pathways that are distinct from how children experience parents' union status change.

*Causal Relationships between Family Complexity and Child Behavior*

As described above, family complexity as measured by union status and sibling relatedness remains associated with children's increased externalizing behavior largely net of selection mechanisms. This consistent evidence of a causal association is distinct in the literature on family change and child well-being, which has documented that selection mechanisms explain most of the association between unstable or complex family systems and outcomes including child cognitive achievement, academic performance, and physical health. Causal explanations for the association between family change and child externalizing behavior have been motivated by theories pertaining to family stress, role ambiguity, and financial strain and supported by analytic methods including child-level fixed effects (Ryan & Claessens, 2013), propensity score matching (Fomby et al., 2016), marginal structural models (Lee & McLanahan, 2015), and hierarchical linear models (Bzostek & Berger, 2017).

We contribute to work seeking to establish causal inference using a difference-in-difference approach that compares change in mother-reported externalizing behavior scores for

children who gained family complexity to change in the scores of children who remained in the same family structure over a five-year period. The difference-in-difference approach attempts to estimate the effect of a “treatment” (in this case, family structure change) by mimicking random assignment to a treatment or control group. The method compares the difference in outcomes in pre- and post-treatment periods in settings where a treatment occurred against outcomes observed at the same two points in time in a context where no treatment occurred. The *group difference* in the *differences over time* represents the estimated effect of being exposed to treatment, i.e., change in the expected value of a child’s behavior problems score that is attributable to exposure to increased family complexity.

In sum, a growing literature has drawn attention to the prevalence and multidimensional nature of family complexity and has begun to establish its association with child behavior. We draw upon data from two cohorts of children and adolescents in a nationally-representative family panel study to add to this literature in three ways. First, we assess stability and change in the prevalence of complex family composition over recent historical time in the U.S., considering both change in parental union status and in sibling composition. Second, we investigate whether the association between family complexity and children’s externalizing behavior has changed during this historical period to consider whether complex family composition has become more or less selective on parents’ antecedent characteristics between child cohorts. Third, we assess whether change in maternal family composition toward more complex organization may be causally related to children’s externalizing behavior problems

using a difference-in-difference approach which controls for children's and mothers' characteristics at baseline.

#### DATA AND METHOD

We use data from the Child Development Supplement to the Panel Study of Income Dynamics (PSID, <https://psidonline.isr.umich.edu/>) (PSID, 2018). PSID began in 1968 with a sample of 4,802 US households, including an oversample of low-income households, and is now the world's longest-running intergenerational household panel study. Descendants of original householders related through birth or adoption become PSID respondents themselves when they establish economically-independent households in adulthood. Participating families were interviewed annually until 1997 and biennially since then, with 40 waves of publicly-available data collected through 2017. Periodic sample refreshers and high wave-to-wave response rates have maintained the sample's population-representativeness over time (McGonagle, Schoeni, Sastry, & Freedman, 2012). At each wave, a single respondent completes the core PSID interview by telephone and reports on all household members. Much of the interview content pertains to adult family members' employment, earnings, assets, health, and family formation behavior.

The PSID Child Development Supplement (CDS) began in 1997 to study the development and well-being of children in PSID households in their family, school, and neighborhood contexts. The original sample included up to two children per household ages 0-12

years in families that completed the 1997 Core PSID interview (N=3,563, 88% response rate at wave 1). Children and their primary caregivers (a child's mother in most cases) were re-interviewed in 2002 (N=2,907, 89% response rate) and 2007 (N=1,608, 90% response rate). (Children who were 18 years or older in 2007 were not eligible for the third wave of the study.) At each wave, children and primary caregivers completed survey interviews, and children also completed cognitive achievement assessments and time diaries.

By 2014, all children in the original CDS cohort had entered adulthood. A new round of CDS was launched in that year (CDS-2014) and included all children born since 1997 who were descended from original or immigrant refresher PSID households and whose families participated in the 2013 Core PSID interview. In contrast to the original CDS, CDS-2014 included all eligible children ages 0-17 years who were present in a household (N=4,333, 88% response rate).

Together, when weighted, these cohort studies initiated nearly two decades apart provide nationally-representative profiles of children in families that were present in the United States in 1997 (PSID, 2017, n.d.). Children of recent immigrants were excluded from the most recent cohort, but as of 2007 (about halfway between the two cohorts), PSID remained representative of approximately 97 percent of US children (Sastry and Duffy 2012). Data from the two cohorts allow us to address our first two research questions for children ages 0 to 12 in 1997 or 2014, a span that generally aligns with other recent work on the prevalence of family complexity over recent historical time (Brown et al., 2016; Manning, Brown, & Payne, 2014). The three waves of

data available for the original CDS cohort (1997, 2002, and 2007) address the third research question using difference-in-difference methods to assess how family complexity is linked with child behavior.

To identify the analytic sample for the first research question, we began with 5,030 children in both CDS cohorts (2,425 children in 1997 and 2,605 children in 2014) who resided with their biological or adoptive mother and were between the ages of 3 and 12. For the second research question (change in association between behavior problems and family complexity), we further limited our analysis to children with a valid BPI score and valid information on all covariates (2,336 children from the 1997 cohort and 2,347 children from the 2014 cohort). For the third research question (difference-in-difference), we retained children who were observed with valid information on measures of family composition and behavior problems for at least two consecutive waves.

The CDS sample does not include children whose families entered the U.S. since 1997. The lack of complete population coverage in these cohorts is problematic to the extent that nativity and generation status represent important axes for explicating change in family complexity over time. We propose, however, that this restriction also carries some advantage in the sense that observed cohort variation represents the influence of historical change in the cultural, social, and economic context of family complexity on successive cohorts of individuals in a stable population. In other words, the observed results cannot be due to changing population composition.



### *Key Variables*

#### *Family complexity*

We used information from the household rosters collected at each wave of the Core PSID interview, parents' marital and birth histories, and the PSID Family Identification Mapping System (FIMS) to establish the following elements of children's family composition from birth to the time of observation in CDS: (1) maternal union status (married, cohabiting, divorced/separated/widowed; never in a union); (2) biological relatedness of mother's spouse/partner to the focal child; and (3) presence of coresident full-, half-, and step-siblings. (In supplemental analyses, we included nonresident siblings of each type and did not find substantively different results.)

To measure family complexity comprehensively, we used this information to identify four sibling arrangements at each CDS wave: No siblings; full siblings only; half- or stepsiblings only; or both full and half-/stepsiblings in the child's household. We also considered three maternal union status types: mother married to or cohabiting with the biological father; mother married to or cohabiting with a step/social father; or single mother (i.e., no coresident romantic partner or spouse). Small sample sizes precluded us from considering married and cohabiting mothers separately. When crossed, these two indicators of family organization yielded 12 family structure types, which are summarized in the bottom panel of Table 1. We discuss this classification in full with regard to our first research question but collapse categories with small cell sizes (as described later) for subsequent analyses.

*Externalizing behavior problems*

We measured externalizing behavior problems from 15 items included in the Behavior Problems Index (BPI), which was administered to primary caregivers of children age 3-17 years at each wave of CDS. The BPI was developed by Peterson and Zill (1986) to measure the incidence and severity of child behavior problems in a survey setting (Institute for Social Research, 2017). Items that contribute to the subscale score for externalizing behavior reflect impulsivity, argumentativeness, aggression, and destructive behavior ( $\alpha=.86$  in 2014). Respondents indicate whether statements describing child behavior are not true (0), sometimes true (1) or often true (2). The subscale score was constructed by collapsing the latter two response categories for each item and summing the resulting dichotomous items. We excluded two items about school behavior that were asked only to caregivers of children age 6 and older in order to retain younger children in the analysis. The BPI was designed to be used across a range of child ages, from early childhood through adolescence, and many studies utilize the instrument across this array of ages (e.g., Singh & Ghandour, 2012). From the early work, we know that overall behavioral problems are slightly higher during early to middle childhood (through age 8) and decline through the adolescent years (Zill, 1990). In our regression models, we include child age as a covariate to account for any behavioral differences that might result from variation by child age.

*Control variables*

Multivariate regression analyses to address the second research question include the following control variables: child age in years, gender, race (white, black, or other/missing), and Hispanic ethnicity; family income-to-needs ratio at the prior Core interview; primary caregiver's years of completed education; mother's age at first birth; and whether the mother was married at the focal child's birth. We used mean-based imputation to replace missing values on control variables (N=52 on age at first birth; N=17 on income-to-needs ratio; N=135 on completed years of education). Missing information on race was coded into an other/unknown category (N=35). Missing information on marital status at birth was coded to "not married" (N=49). Imputation flags were statistically nonsignificant in multivariate models, leading us to conclude that observations with missing data were not substantively different from those with complete data on the distribution of caregiver-reported externalizing behavior problem scores after controlling for other observable factors.

#### *Method*

We used conventional data description techniques to address the first research question, examining the weighted prevalence of family types across CDS cohorts. To address the second research question, we used ordinary least squares regression, controlling for sociodemographic characteristics and background characteristics of the focal child's mother. Multivariate analyses controlled for the child's and mother's demographic and socioeconomic characteristics at birth (or at baseline) and were weighted to be representative of children whose families have been in the United States at least since 1997. Descriptive statistics for covariates appear in Appendix 1.

As noted above, we addressed the third research question using a difference-in-difference approach to assess change in behavior scores between two waves in the original CDS cohort, which was observed over up to three waves between 1997 and 2007 as a function of changing family composition between waves (i.e., 1997-2002 for children who were 3-12 years in the earlier wave and 2002-2007 who were 0-7 years in 1997) with stacked observations for children observed in at least two of the three waves; results were robust when the two periods were considered separately. This analysis focuses on children whose primary caregiver was the biological mother at each CDS interview. Because we used panel data with repeated observations on individuals, these difference-in-difference models function as fixed-effects estimates. That is, we compared individual children's caregiver-reported behavior problems at two points in time, taking into account whether each child experienced family change in the interval between waves. In this context, the statistical model does not include individual-level demographic or baseline variables because these fixed characteristics cannot explain change in an individual child's reported behavior problems over time.

We present results from separate difference-in-difference models to estimate change in externalizing behavior as a function of (1) added sibling complexity (i.e., acquiring a coresident step- or half-sibling in the interval); (2) an unpartnered mother's transition into a new union; and (3) a married or cohabiting mother's transition out of her union. (The third condition includes a small number of children whose mothers exited a union and formed a new union over the interval.) Each model controlled for co-occurring change in the other family structure domain;

that is, estimates of the effect of added sibling complexity were adjusted for mother's co-occurring union formation or dissolution, and vice versa. This approach decomposes the various components of family complexity development into specific events in order to consider the estimated 'treatment' effect of exposure to each type of family change. On the one hand, this is not ideal conceptually, given that the concept of family complexity is meant to capture the sequential, cumulative, and multidimensional nature of family structure change over time, and added sibling complexity is typically contingent on one or more union transitions. On the other hand, this approach is consistent with recent work on repeated changes in family structure that has advocated for a return to attention to the specific types of family change that culminate in family complexity based on evidence that not all types of family change are equally consequential for children's behavior (Bzostek & Berger, 2017; Lee & McLanahan, 2015). Further, prior work suggests that the associations that union status complexity and sibship complexity share with children's externalizing behavior are largely independent of each other (Fomby et al., 2016).

## RESULTS

*Research question 1: How has the prevalence of family complexity with regard to parental union status and sibship composition changed over recent historical time?*

Table 1 shows the weighted distribution of maternal union status (top panel), sibling composition (middle panel), and union status and sibship composition jointly (bottom panel) in CDS-1997 and CDS-2014 for children who were between 3 and 12 years old. (CDS-2014

included children 13 years and older, but the age range is limited here for comparison to the baseline in the earlier CDS cohort.)

The weighted share of children living with married or cohabiting biological parents was identical in the two periods (71.8%), but in the more recent cohort, children were more likely to live with a married or cohabiting repartnered mother compared to the earlier cohort ( $p < .05$ ) with a commensurate decline in the share of children living with an unpartnered mother. The share of children living with only full siblings declined by 4 percentage points between the two periods, from 78.6% to 74.7% ( $p < .05$ ), and each of the other sibling configurations became somewhat more common. Yet the magnitude of change in each alternative category was relatively small. The bottom panel of Table 1 also suggests a general transition toward more family complexity in the more recent cohort, although the magnitude of change in weighted estimates was low and achieved statistical significance in only two of 12 comparisons. Consistent with prior research, CDS-1997 and CDS-2014 document a small shift away from two-parent households with full siblings only to a variety of other family forms, none of which predominates as an emerging complex family configuration. For the most part, the picture presented describes “stabilized complexity” among U.S. children across these two periods.

Table 1. *Maternal union status and sibling composition, children 3-12 years, PSID Child Development Supplement, 1997 and 2014 (N, unweighted and weighted percentages)*

	1997			2014		
<i>Maternal union status</i>						
	N	Unwtd %	Wtd %	N	Unwtd %	Wtd %
Married/cohabiting biological parents	1,536	63.3%	71.8%	1,593	61.2%	71.8%
Married/cohabiting step/social parent	145	6.0%	5.2%	176	6.8%	7.5% *
Single parent	744	30.7%	23.0%	836	32.1%	20.7%
*2014 different from 1997 at p<.05						
<i>Sibling composition</i>						
	N	Unwtd %	Wtd %	N	Unwtd %	Wtd %
No siblings	338	13.9%	11.7%	386	14.8%	13.5%
Full siblings only	1,753	72.3%	78.6%	1,732	66.5%	74.7% *
Half/stepsiblings only	242	10.0%	6.8%	367	14.1%	7.7%
Both full and half/step	92	3.8%	2.9%	120	4.6%	4.1%
*2014 different from 1997 at p<.05						
<i>Marital union status and sibling composition</i>						
	N	Unwtd %	Wtd %	N	Unwtd %	Wtd %
Married/cohabiting biological parents						
No siblings	173	7.1%	6.4%	184	7.1%	7.3%
Full siblings only	1,306	53.9%	63.6%	1,333	51.2%	61.6%
Half/stepsiblings only	8	0.3%	0.2%	17	0.7%	0.7% *
Both full and half/step	49	2.0%	1.6%	59	2.3%	2.2%
<i>Subtotal</i>		63.3%	71.8%		61.3%	71.8%
Married/cohabiting step/social parent						
No siblings	18	0.7%	0.5%	20	0.8%	0.9%
Full siblings only	88	3.6%	3.6%	88	3.4%	3.8%
Half/stepsiblings only	25	1.0%	0.9%	45	1.7%	1.8%
Both full and half/step	14	0.6%	0.3%	23	0.9%	1.1% *
<i>Subtotal</i>		5.9%	5.3%		6.8%	7.6%
Single parent						
No siblings	147	6.1%	4.8%	182	7.0%	5.3%
Full siblings only	359	14.8%	11.5%	311	11.9%	9.4%
Half/stepsiblings only	209	8.6%	5.7%	305	11.7%	5.2%
Both full and half/step	29	1.2%	1.0%	38	1.5%	0.7%
<i>Subtotal</i>		29.5%	22%		30.6%	19.9%
*2014 different from 1997 at p<.05						





*Research question 2: How is family complexity associated with children's behavioral problems in the two cohorts?*

Table 2 shows average unadjusted caregiver-reported externalizing behavior problems scores for children in 1997 and 2014 using the family composition classification described in Table 1. We pooled children with any step- or half-siblings into a single category, regardless of whether they also had full biological siblings. This approach improved statistical efficiency while continuing to distinguish sibling complexity from other family structure categories. Asterisks and crossbars indicate statistically significant differences compared to the modal category within year, at  $p < .05$  and  $p < .10$  respectively. Alphabetic characters indicate

Table 2. Average primary caregiver-reported externalizing behavior scores, children 3-12 years PSID Child Development Supplement, 1997 and 2014 (N, weighted mean and standard deviation)

	1997			2014		
<i>Maternal union status</i>	N	Mean	SD	N	Mean	SD
Married/cohabiting biological parents <sup>A</sup>	1,479	5.13	3.46	1,437	4.66	3.47
Married/cohabiting social/stepparent	142	6.38	4.05 *	154	5.88	4.02 *
Single parent <sup>A</sup>	715	6.37	4.5 *	756	5.32	5.09 *
<i>Sibling composition</i>	N	Mean	SD	N	Mean	SD
No siblings <sup>C</sup>	317	5.83	3.85	344	5.15	3.99
Full siblings only <sup>A</sup>	1,694	5.38	3.65	1,548	4.70	3.58
Half/stepiblings only	235	5.82	4.77	342	5.85	6.00 *
Both full and half/step	90	5.84	4.20	113	5.62	4.36 j

\*Different from married/cohabiting biological parents at  $p < .05$

<sup>A</sup> Period differences in conditional mean scores are significant at  $p < .01$

j Different from full siblings only at  $p < .10$

<sup>A</sup> Period differences in conditional mean scores are significant at  $p < .01$

<sup>C</sup> Period differences in conditional mean scores are significant at  $p < .10$

<i>Marital union status and sibling composition</i>	N	Mean	SD	N	Mean	SD	
<i>Married/cohabiting biological parents</i>							
No siblings <sup>B</sup>	163	5.6	3.73	165	4.49	3.46	
Full siblings only <sup>B</sup>	1,261	5.09	3.42	1,198	4.63	3.44	
Any half/step siblings	55	4.83	3.37	74	5.75	3.96	*
<i>Married/cohabiting step/social parent</i>							
No siblings	18	4.41	4.36	19	4.89	3.71	
Full siblings only	86	6.24	3.8	74	6.41	4.10	**
Any half/step siblings <sup>C</sup>	38	7.6	4.11	61	5.60	3.95	
<i>Single parent</i>							
No siblings	136	6.31	3.87	160	6.12	4.55	**
Full siblings only <sup>A</sup>	347	6.75	4.47	276	4.55	4.11	
Any half/step siblings	232	5.78	4.87	320	5.86	6.80	**

\*Different from married/cohabiting and full siblings only at  $p < .05$

\*\*Different from married/cohabiting and full siblings only at  $p < .01$

<sup>A</sup> Period differences in conditional mean scores are significant at  $p < .01$

<sup>B</sup> Period differences in conditional mean scores are significant at  $p < .05$

<sup>C</sup> Period differences in conditional mean scores are significant at  $p < .10$

group differences that were significantly different across cohorts. In both cohorts, children living outside of two-parent families had significantly higher externalizing behavior scores compared to their peers ( $p < .05$ ), with the magnitude of score differences between 0.6 and 1.2 points on a 15-point scale. Children living with a single parent or repartnered parents had significantly lower BPI scores in 2014 compared to 1997 ( $p < .05$ ).

Sibling complexity was associated with higher externalizing behavior problem scores compared to living with full siblings in 2014, but not in 1997. For children with no siblings ( $p < .05$ ) or full siblings only ( $p < .10$ ), average scores were lower in the later cohort compared to

the earlier cohort, but average scores were statistically similar in the two periods for children who experienced any sibling complexity. Thus, the association between sibling complexity and child behavior problems appears stronger in the later compared to the earlier cohort because caregiver-reported behavior problems declined on average for children with no siblings or full siblings only.

Union status and sibling composition were considered jointly in the bottom panel. In both cohorts, children with some type of family complexity – either through mother’s unpartnered or repartnered status or through complex sibship – generally had higher average behavior problem scores compared to children living with both parents and full siblings, although not all comparisons were statistically significant in both cohorts. (Small cell sizes, particularly for children residing with a step- or social parent, may have prevented group differences from achieving statistical significance.) Behavior problems scores were mostly lower on average for children in 2014 compared to 1997. These period differences were statistically significant in four of nine groups.

To adjust for factors that potentially confound the association between family complexity and child behavior, we estimated externalizing behavior problems scores for children in each family composition group controlling for child sociodemographic and maternal baseline characteristics. Coefficients and standard errors from ordinary least squares regressions appear in Appendix 2. Model 1 included union status and sibship composition simultaneously as separate variables. The categories for “full siblings and step/half siblings” and “step/half siblings only” were collapsed to improve efficiency in estimation. Model 2 considered union status and sibship

composition jointly. Period differences in the magnitude of coefficients associated with covariates were not statistically significant, and F-tests for joint significance of covariates were generally similar ( $F(9, 2327)=7.92, p<=.01$  in 1997 and  $F(9,2338)=5.42, p<.01$  in 2014), suggesting that selection mechanisms into family complexity were similar in the two periods.

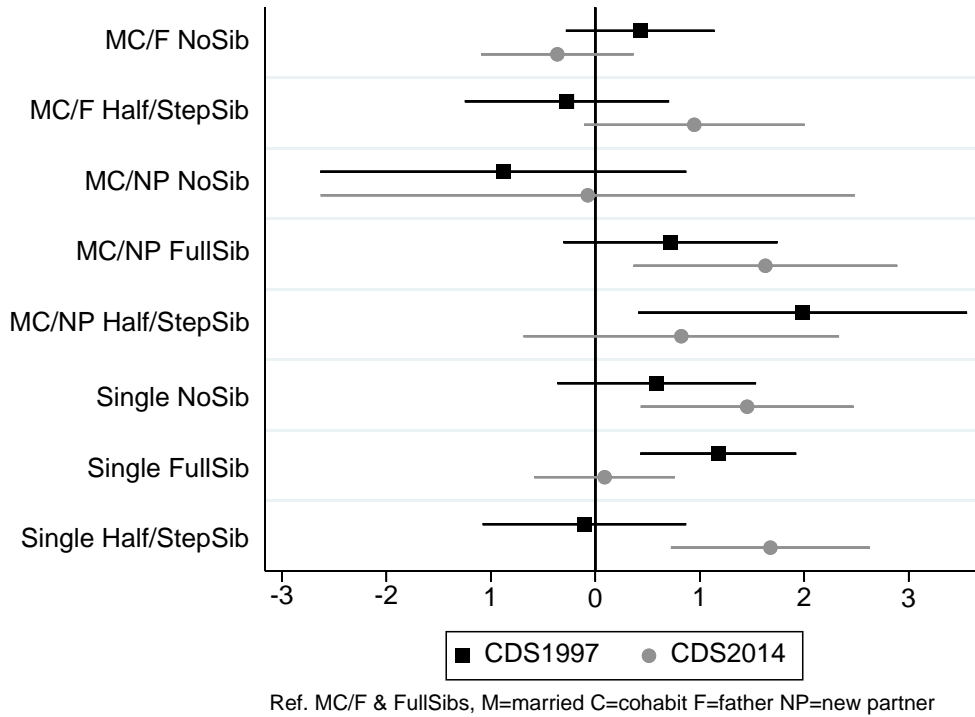
Figure 1 summarizes the estimated difference in children's predicted scores by union status and sibship composition considered jointly (compared to living with both married or cohabiting parents and full siblings only). Positive values reflect an estimated increase in children's externalizing behavior problem scores, and negative values reflect an estimated decrease in scores compared to children residing with both parents and full siblings. Error bars represent 95 percent confidence intervals. Black bars refer to the 1997 cohort, and grey bars refer to the 2014 cohort. In general, children with repartnered or unpartnered mothers and children with step/half siblings have higher behavior problem scores in 1997 and 2014, although not all differences compared to the reference group were statistically significant.

There is little evidence that these group differences changed in magnitude over time. Point estimates in 2014 fell within the 95% confidence interval for estimates in 1997 with the exception of children living with an unpartnered mother and full siblings or half/step siblings. After accounting for compositional differences, behavior problem scores were roughly similar within family composition categories in the two periods. We conclude that the strength of the association of family complexity with externalizing behavior was similar in the two historical periods, and at least part of the observed association is attributable to similar selection mechanisms in both periods. We note, however, that the coefficient of determination was smaller

in 2014 compared to 1997, suggesting that other unobserved mechanisms might have been more salient in confounding or mediating the relationship between family complexity and externalizing behavior in that year.

Prior research has highlighted gender differences in how children respond to change in family structure and family complexity (Cavanagh et al. 2008; Cavanagh and Huston 2008; Cooper et al. 2011), with boys more likely than girls to engage in externalizing behaviors in response to a family change. In a separate analysis, we confirmed that this pattern held across cohorts, with boys exhibiting higher predicted behavior problem scores when residing with a single or repartnered parent, particularly when a step- or half sibling was also present in the household. These patterns were more pronounced in 2014 than in 1997. Family complexity was less consistently and more weakly associated with girls' behavior in both cohorts.

FIGURE 1. POINT ESTIMATES AND 95% CONFIDENCE INTERVALS, UNSTANDARDIZED OLS REGRESSION COEFFICIENTS ASSOCIATED WITH FAMILY COMPLEXITY (JOINT MATERNAL UNION STATUS AND COMPLEX SIBSHIP) PREDICTING CHILDREN'S EXTERNALIZING BEHAVIOR PROBLEMS SCORES, CDS-1997 AND CDS-2014.



*Research question 3: To what extent is change in family structure and complexity associated with change in behavior problems during childhood?*

Table 3 summarizes results from difference-in-difference models to estimate group differences in changes in children’s externalizing behavior over a 5-year period as a function of unpartnered mothers’ new union formation (panel 1), two-parent households’ union dissolution (and subsequent maternal repartnering) (panel 2), and new complex sibship (panel 3). As we noted above, with two-wave panel data, the difference-in-difference model functions in a fixed-effects framework where time-invariant and baseline covariates are excluded because they cannot explain within-person change in the outcome of interest. Within each panel of Table 3, cells summarize children’s predicted externalizing behavior score at time 1 (1997 or 2002) and

time 2 (2002 or 2007) separately for those in the treatment (family change) and control (no family change) groups. Marginal values represent the calculated difference *between* groups at one point in time and *within* groups between points in time. The difference-in-difference estimate in the lower right-hand corner summarizes the *difference* in the *difference* between predicted average time 1 and time 2 scores for the treatment and control groups. Statistically significant estimated values are denoted by asterisks or crossbars.

Panel 1 indicates that children with an unpartnered mother at baseline who eventually repartnered had similar behavior problem scores on average compared to children whose mothers did not eventually repartner (6.406 vs. 6.647). Between waves, children in the former group experienced a slight increase in their estimated behavior problems scores (to 6.696) and those in the latter group experienced a slight decrease (to 6.114). The differences in time 2 vs. time 1 scores for the two groups were 0.290 and -0.533 respectively. The difference-in-difference is the difference between these two values:  $0.290 - (-0.533) = -0.823$ . That is, the change over time favors children whose mothers repartnered compared to those whose mothers remained unpartnered, but this difference is not statistically significant. Rather, the change in children's externalizing behavior scores over time is similar among children regardless of whether they experience maternal repartnering in the interval.

Panel 2 summarizes the same information for children living with married or cohabiting parents at baseline (time 1). Children whose parents eventually experienced union dissolution had higher externalizing behavior problems at baseline compared to children whose parents remained partnered ( $p < .05$ ), but these group differences were not statistically significant at time

2. This finding runs contrary to extant research that finds the negative effect of union dissolution on children's behavior is stronger than the effect of unpartnered parents' new union formation (Lee and McLanahan 2015). Separately, we restricted the sample only to children residing with married parents at baseline and found similar results.

Panel 3 considers the addition of coresident step- or half siblings as a source of family complexity. At baseline, children who eventually acquired at least one step- or half sibling had significantly higher initial behavior problem scores compared to those who did not gain sibling complexity (7.733 vs. 5.400,  $p < .01$ ), and this difference persisted after treatment (at time 2,  $p < .05$ ). The between-group difference after treatment was statistically nonsignificant, as was the difference-in-difference coefficient. That is, the magnitude of change in children's behavior problem scores over time was statistically similar regardless of the addition of complex sibship.



Table 3. Summarized results from difference-in-difference regression models estimating change in mother-reported externalizing behavior problems scores, PSID CDS-1997 to CDS-2007.

*Union status change: Mother unpartnered at time 1*

	BPI score at time 1	BPI score at time 2	Change over time	Difference- in- difference	N
Mother unpartnered at time 1 and time 2	6.406	6.696	0.290		634
Mother unpartnered at time 1, repartnered at time 2	6.647	6.114	-0.533		130
Group difference	0.241	-0.583		<b>-0.823</b>	

*Union status change: Mother partnered with biological/adoptive father at time 1*

	BPI score at time 1	BPI score at time 2	Change over time	Difference- in- difference	N
Mother partnered at time 1 and time 2	5.083	4.811	-0.272		1,432
Mother partnered at time 1, unpartnered or repartnered at time 2	6.243	5.455	-0.788		159
Group difference	1.160*	0.644		<b>-0.516</b>	

*Complex sibship*

	BPI score at time 1	BPI score at time 2	Change over time	Difference- in- difference	N
No step- or half-siblings at time 1 or time 2	5.400	5.214	-0.186		2,453
No step- or half-siblings at time 1, any step- or half-siblings at time 2	7.733	7.324	-0.409		71
Group difference	2.333**	2.110*		<b>-0.223</b>	

\*\*\*p&lt;.001, \*\*p&lt;.01, \*p&lt;.05

## DISCUSSION

Recent research on the relationship between family structure and children's externalizing behavior has become increasingly nuanced with regard to the conceptualization and measurement of family complexity and analytic methods to establish causality. Yet, much of the

extant work is based on older cohort studies whose samples were observed during a period when the rise in family formation outside of married two-parent households appeared to be boundless. Since that time, the pace of complex family formation appears to have slowed or plateaued. As new family forms may have become more familiar and normalized over time, we asked whether selectivity into complex family organization has also changed. To address these questions, we used data from two nationally-representative cohorts of children age 3-12 years observed in 1997 and 2014. In addition, we revisited the question of whether emerging family complexity could be causally associated with children's increased behavior problems in the era of the late 1990s and early 2000s using a difference-in-difference approach applied to longitudinal data with repeated observations on caregiver-reported child behavior problems.

We report three main findings. First, the prevalence and variety of family complexity was mostly stable between 1997 and 2014. We found only a slight increase in the prevalence of family complexity between 1997 and 2014 with regard to both union status and complex sibship. The pattern of increase suggested a slower-paced but continuing diffusion out of two-parent families with full siblings only into a variety of alternative family types, with no single arrangement predominating in the increase. This general stability is consistent with recent work showing that the prevalence of family complexity has plateaued overall (Cancian et al. 2017; Manning et al. 2014; Martin et al. 2018) even as family forms have become increasingly varied in their composition (Powell et al. 2016). Consistent with the expectation of diverging destinies by social class (McLanahan 2004) under the second demographic transition (Van De Kaa 1987),

family complexity remains selective on socioeconomic and demographic attributes including education, race/ethnicity, and age at first birth.

Second, we found that maternal union status and complex sibship were associated with children's elevated behavior problems in both cohorts, although the specific family configurations that predicted significantly higher behavior problem scores were not the same in multivariate models. In both cohorts, residence with a single mother or a stepparent was associated with elevated behavior problems. The additive contribution of sibling complexity varied between cohorts. The general pattern of results is consistent with work from earlier cohorts, suggesting that there is a relationship between family composition and child behavior in the U.S. context that to date has been invariant to historical context (Fomby et al. 2016; Gennetian 2005; Tillman 2008).

Third under a difference-in-difference approach, evidence supported the argument that family structure changes underlying the emergence of family complexity are not causally associated with children's subsequent more frequent behavior problems. Rather, children whose parents' union eventually dissolved or who acquired half- or stepsiblings already had elevated behavior problems at baseline. This finding is in contrast to research that identifies a causal relationship between various dimensions of family change and complexity and children's and adolescents' behavior under a variety of research designs to control or account for selection (Fomby et al. 2016; Lee and McLanahan 2015; Ryan and Claessens 2013). In this body of work, ours is distinctive for considering both union status change and added sibling complexity in a difference-in-difference framework. We expect that this approach better accounts for unobserved

characteristics that inhere in children as a result of background characteristics and family process up to the time of baseline observation that would persist even in the absence of subsequent family change. It may be the case, though, that early family structure change (i.e., prior to earliest observation in PSID-CDS) drove children's elevated behavior problems scores at each observation. Thus our findings do not contradict prior work that has documented the enduring effects of early family structure change on behavior in middle childhood and adolescence (Cavanagh and Huston 2008; Fomby and Bosick 2013). It may suggest, however, that net of those earliest changes, subsequent family change does not additively influence children's externalizing behavior. Our findings also may be relatively conservative because of the five-year lapse between observations. Prior work suggests that children recover from single episodes of family change within two years (Hetherington, 1999), in which case children might have recovered at least to baseline levels of behavior before being observed again.

Our findings raise broader questions about how to understand family patterns and processes—and their implications—over time. We find that family complexity is associated with adverse outcomes for children (in this case, externalizing behavior problems) at two points in historical time, but change in complexity is not associated with change in behavioral problems in a way that would suggest a causal relationship. Thus, we contend that families who experience aspects of complexity are distinct in various ways from families that do not. We also note that there could be potential reverse causality such that children's behavioral problems—and the challenges of dealing with them—may increase the likelihood of parents' union dissolution and repartnering over time. This perspective is in keeping with studies highlighting the bidirectional

nature of parent-child relationships, with parents influencing children and children's attributes and behavior also affecting parents' behavior (Gault-Sherman, 2012; Hawkins, Amato, & King, 2006). Understanding these "child effects" and family complexity could be a useful area for future research, as we endeavor to better understand the linked lives within families that are continually evolving, often in complicated ways.

We note some limitations to this work. First, sample sizes are relatively small and prevalence estimates are low for some of the family composition classes, which poses a threat to the reliability of our estimates. In addition, our analyses pool children with married or cohabiting parents and children with any step-or half siblings regardless of whether full siblings are present. Pooled estimates of the association of these dimensions of family structure with child behavior are inefficient to the extent that the underlying groups are heterogeneous with respect to the dependent variable. In particular, parents' cohabiting unions and stepsibling relationships may be more transient or contingent compared to parents' marriage and half sibling relationships and thus may contribute to more frequent behavior problems that are masked in the pooled estimates presented here. Second, the difference-in-difference approach did not allow us to consider multiple types of family structure change simultaneously. Third, we used a parsimonious set of covariates in regression models, and there may be unobserved characteristics that confound the association between family complexity and child behavior problems. That said, the measures that were included allowed us to assess whether the sociodemographic correlates of family complexity and child behavior had changed over time and to establish baseline differences in behavior problems scores among children who later experienced family complexity compared to

those who did not. Finally, the samples are not inclusive of children whose families entered the United States after 1997. Despite these limitations, this work contributes to ongoing research on the relationship between family complexity and child behavior by employing recently-collected data on children to extend our knowledge to the current era and by highlighting the continuing importance of accounting for selection mechanisms to specify these relationships accurately.

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