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Abstract

We investigate the prevalence of family instability and its association with children's school readiness at age 5 in the United States and the United Kingdom. Data are drawn from nationally-representative, longitudinal studies of children born in 2000 and 2001 in each country. We use latent class growth analysis to identify distinctive types of family instability experiences. We find that family structure trajectories are similar in the two countries, although the United States is distinctive in having a small share of its population exposed to high levels of family turbulence and coresidence with social fathers. In both countries, selection factors explain the association of nonmarital family trajectories with children's cognitive achievement. The association with behavior problems is partially explained by family context.

During the last decade, social scientists have identified *family instability* as a distinct dimension of family structure that is associated with children's compromised development on outcomes pertaining to aggressive behavior, social aptitude, language acquisition, and academic engagement. Family instability effects occur beyond the particular family structure in which a child lives at any point in time. Typically, family instability is defined as the repeated entry and exit of a parent's spouses or romantic partners from a child's household. Current estimates indicate that nearly 10% of children in the United States experience at least two such transitions by the time they enter kindergarten (Fomby, 2010) and nearly 20% experience three or more transitions by adolescence (Cavanagh, Schiller, and Riegle-Crumb, 2006). Because family instability occurs more frequently among children born to unmarried or cohabiting parents, the prevalence of family instability is expected to increase as a consequence of rising rates of nonmarital childbearing in the United States.

We develop two extensions to the current literature. First, we conduct a cross-national comparison to assess the association between family instability and school readiness in the United States and the United Kingdom. Much of the current literature on the effect of family instability on child development is derived from studies of U.S. populations. As a result, we know relatively little about the extent to which responses to family instability are universal (i.e., a child development effect) or influenced by the distinctive context of family formation and dissolution in the United States (Cherlin, 2009). Second, we use longitudinal latent class growth analysis to provide a parsimonious accounting of the variation in the frequency, timing, and nature of family structure change that young children experience. This method allows us to identify dominant patterns of instability across national contexts and to determine the components of family instability that are most strongly associated with children's compromised

well-being. Our analysis focuses on children's cognitive achievement and conduct problems at the point of school entry in both countries, a critical life course stage that has received increasing attention in family instability literature (Cooper, Osborne, Beck, and McLanahan, 2011; Fomby, forthcoming).

Background

In the last two decades, research conducted on nationally-representative U.S. samples has established that children's exposure to repeated changes in parents' union status is associated with a constellation of outcomes that are associated with compromised development and educational attainment. In early and middle childhood, these outcomes include an elevated risk of externalizing or aggressive behavior, diminished prosocial behavior, and compromised verbal ability. Adolescents who have experienced repeated family structure change are less likely to complete college-preparatory coursework in high school and more likely to engage in delinquent behavior; young people also make earlier transition to first sexual intercourse and nonmarital childbearing and engage in more unstable romantic unions during adolescence compared to adolescents raised in stable family structures.

For some outcomes and life stages, the independent association of family instability varies by race and gender in the United States. White and Hispanic youth are more negatively affected than their Black peers on outcomes pertaining to externalizing behavior and sexual activity. Boys' cognitive and academic development are more negatively affected in early childhood, and there is some evidence that adolescent girls' risk of delinquency increases with prior exposure to family instability.

Three explanations for the association of family instability with child well-being have been tested on U.S. populations. The first, which we call the *selection* hypothesis, posits that

parents who experience repeated changes in union status possess attributes that contribute both to unstable relationships with romantic partners and to children's compromised development, either through genetic or environmental means. Under the selection hypothesis, the association between family instability and child development are each associated with parents' pre-existing characteristics, and the association between the two is spurious.

Some tests of the selection hypothesis have used two-generation data to capture indicators of parents' behaviors and attributes prior to union formation or childbearing (Fomby and Cherlin, 2007). In other studies using child-centered data sets, retrospective measures of parents' traits obtained when children were newborns or infants have approximated indicators of selection (Osborne and McLanahan, 2007). These studies, mostly focused on mothers' union histories (rather than both biological parents' histories), have found that maternal educational attainment and cognitive achievement largely explain the association of family instability with children's nonverbal ability, but some association with verbal ability remains. Most studies have found that the selection hypothesis does not account for the association between family instability and outcomes related to externalizing behavior. One exception is Capaldi and Patterson (1991), a longitudinal study of a small sample of mostly White boys in one metropolitan area. The authors mothers' antecedent antisocial behavior mediated the association between repeated family structure change and the boys' delinquent behavior in 6th grade.

The second explanation pertains to the family context in which instability occurs. A variety of theoretical orientations fall under this perspective. Most frequently, testable hypotheses are derived from family stress theory, which posits that the resources and coping strategies available to family members influence how they respond to stressful and potentially disruptive events that occur within or outside of the family system. Family structure change

represents a stressor that occurs within the family system, and researchers have considered the extent to which deficits in economic resources like income and employment, social resources like kin support, psychosocial resources like parents' emotional health and family cohesiveness explain children's response to instability (Bzostek and Beck, 2011; Fomby and Osborne, 2010; Osborne and McLanahan, 2007).

Other studies draw on extensions to family stress theory to consider how prior family instability reconfigures available resources to influence children's development. In this body of work, then, family instability is both the stressor that exposes potential weaknesses in family resources and the trigger to change the resources that are subsequently available. Research drawn from the Fragile Families and Child Wellbeing Study has documented how changes in union status influence children's experience of financial resources, maternal stress, and maternal parenting (Beck, Cooper, McLanahan, and Brooks-Gunn, 2010; Cooper, Meadows, McLanahan, and Brooks-Gunn, 2009; Meadows, McLanahan, and Brooks-Gunn, 2008). Cavanagh and Huston (2006) found that both initial levels of social, emotional, and economic resources and changes in those resources conditioned the association between family instability and young children's relationships with peers and teachers.

The last perspective concerns ecological change, or the co-occurrence of other changes in a child's life when a parent's union status changes. This perspective is derived from Bronfenbrenner's ecological systems theory (Bronfenbrenner and Vosta 1992), which posits that children are nested in interrelated levels of social context. The ecological change hypothesis posits that changes in other social contexts that co-occur with family structure change may be more consequential to child development than family change itself. Examples of co-occurring events that may influence young children include residential change, exits from or entries into

living arrangements with extended kin, child care change or school change, and changes in parents' work schedules.

Several studies have found support for this perspective. In one study, adolescents' risk of delinquency and White adolescents' risk of early sexual initiation and nonmarital childbearing after experiencing family instability were partially explained by their absence of social protection, measured as contact with extended kin, a sense that adults other than their parents cared for them, and strong school attachment (Fomby, Mollborn, and Sennott, 2010). In a second study, the association between girls' family instability and delinquency in adolescence was mediated by school change, and that effect was partially explained in turn by greater exposure to peer pressure (Fomby and Sennott, 2009). Research testing the ecological hypothesis on younger children is more limited, but one study based on a nationally-representative sample of children from the United Kingdom found small but significant attenuating effects of neighborhood quality, residential change, and contact with extended kin on the association between the number of family transitions a child had experienced and conduct problems at school entry (Fomby, forthcoming).

Although few studies have addressed all three mechanisms simultaneously, the general consensus among family scholars is that each mechanism likely shapes child development in meaningful ways. In this study, we include indicators that tap selection processes, family processes, and ecological context to better understand the link between family structure change and children's behavior at the start of formal schooling. Moreover, by comparing mechanisms cross-nationally, we gain insight into the ways family functioning is shaped by social context.

Family Instability in the United States and the United Kingdom

One limitation to the current literature on family instability is its focus on U.S. populations. Compared to other developed countries, the United States experiences high rates of marriage, divorce, and remarriage, and the context of nonmarital fertility has changed dramatically in the last three decades, with cohabitation emerging as an increasingly important context for childbearing and childrearing. Patterns of union and family formation in the United States are also sharply divided by educational attainment and social class. Cherlin (2009) highlighted the singularity of the U.S. case by emphasizing the distinctive and contradictory historical roles of Protestantism and a culture of self-fulfillment in shaping Americans' views on marriage and family. This exceptionalism challenges the utility of current theoretical approaches to explain how family instability emerges and why it is robustly associated with specific dimensions of child development. Population differences by race and gender suggest that the response to family instability is to some extent socially determined. International comparisons provide an avenue to assess the generalizability of the experience of family instability and to deepen our theoretical understanding of the phenomenon by identifying instances where children's responses deviate from the American context.

The United Kingdom offers a useful comparison to the United States. While the countries have similar rates of nonmarital childbearing, cohabitation with children is a more established and enduring family form in the United Kingdom than in the United States, and a larger share of cohabiting unions with children transition to marriage in the United Kingdom. Further, until 2009, the United Kingdom offered more generous income supports to families and to unemployed parents compared to the United States, which may have influenced a parent's decision to remain single or to leave a union during the period under consideration. Finally, residential mobility is less frequent in the United Kingdom compared to the United States, so the

effect of residential change following a family structure change on child adjustment may be minimal, or may be exacerbated just because it is a relatively uncommon event.

Overall, among children born in the United Kingdom in 2000, 25% had experienced at least one change in family structure, and about 7% had experienced two or more changes by the time they began school (Kiernan and Mensah, 2010). Most of that family change occurred to children born to single or cohabiting rather than married parents. In one study of union instability experienced by young children (Fomby, forthcoming), the number of mothers' union status changes was positively associated with an elevated risk of emotional and aggressive behavior problems and negatively associated with children's cognitive ability at age 5. These findings are consistent with research on young children in the United States. Also similar, only the significant associations between family instability on the one hand and aggressive behavior and verbal ability on the other remained after accounting for indicators of maternal background and family context. While these results highlight the similarity between the two contexts, no study to date has made a direct comparison between two cohorts of children born in the same period in the two countries, a contribution we make here.

Conceptualizing instability

Increasingly, the broad concept of family instability has become more nuanced as researchers have sought to identify the contexts in which children are most influenced by repeated family structure change. In particular, scholars have considered whether children respond differently to union status change depending on the union status into which they were born (i.e., married, cohabiting, dating, or single parents) or into which they transition. On the one hand, children born to married parents may have more to lose when a union dissolves if married parents have more economic resources and time compared to cohabiting or single parents. On the

other hand, the end of a cohabiting union may be more consequential for children if the end of a nonmarital union does not translate into formal child support and custody agreements or if children lose access to extended kin in the nonresident parent's family (Harknett and Knab, 2007). Children born to single parents may experience some income gain when a parent repartners, but competing demands for parents' time and role ambiguity in complex households may offset developmental gains associated with material improvements (Cherlin, 1978; McLanahan, 2010).

Results of empirical tests are mixed, with some research indicating that transitions out of cohabiting unions are better for children's early development than remaining in that status (Brown, 2008), and other research indicating that subsequent family structure transitions are more consequential for children's behavior when they begin in a cohabiting compared to married-parent union (Cavanagh and Huston, 2006). Other research has found that transitions following the dissolution of either a cohabiting or married union are more detrimental for children's physical health than transitions occurring to parents who were single at the child's birth. Recent work has found that transitions in coresidential and dating unions have similar effects for children's school readiness (Cooper, Osborne, Beck, and McLanahan, 2011). Magnuson and Berger (2009) found that net of the number of transitions experienced, children's transitions to a single-mother or social-father household in middle childhood had deleterious consequences for children's behavior and cognitive achievement.

We argue that to some extent, the lack of clarity in this research results from a lack of parsimony in measurement and sample size limitations. In longitudinal data, a nearly inexhaustible number of interaction terms may be estimated to capture union status, social father presence, and the timing of union status changes in a child's household. Some of these

interactions may be significant by chance alone, while others may capture meaningful differences but fail to achieve statistical significance due to small cell sizes. No study can reasonably test all interactions in the format of a traditional scholarly article. To address this limitation, we use longitudinal latent class analysis (LLCA), a variant of growth mixture modeling, as a form of data reduction to identify dominant patterns in family structure change in the two contexts. The classes that emerge from our LLCA analysis become the key independent variables in our multivariate models explaining variation in children's school readiness by experience of family change.

Child development at the transition to school

The life course perspective calls special attention to transition points that direct children's social pathways (Elder, 1998). The start of elementary school is one such transition. It marks children's movement from the family into the larger society and their introduction to a large-scale peer culture. Importantly, it also marks the start of their formal educational trajectory (Pianta and Cox, 1999). How children make this transition is, in part, a function of cognitive competencies as well as differing in life circumstances and experiences that make them more or less school-ready (Alexander and Entwisle, 1988). School readiness, in turn, affects rates of early learning. Because early learning is the basis of future ability group placement, teacher expectations, and skill sets, starting points shape later trajectories. Thus, how well children make this transition—academically and behaviorally— goes a long way in shaping later well-being.

For these reasons, we consider three indicators of school readiness in both the UK and the US. Our behavioral indicator is children's aggressive behavior, including being impulsive, angry, or destructive. These behaviors matter to the school transition in that they can undermine the formation of positive relationships with peers and teachers and also interfere with their ability

to learn (Cavanagh and Huston, 2006; Entwisle and Alexander ,1999). Children's academic skills, measured with standardized tests of reading and math, are also considered. Each of these indicators is associated with children's later academic and social functioning across childhood. Moreover, evidence suggests that each is shaped by the early home environment, including family structure and instability.

Overall, we expect some similarities in the relationship between family instability and children's school readiness across context. However, given the United Kingdom's nearly-universal, publicly subsidized preschool education compared with more variable preschool education options in the United States, we expect that the potentially negative effect of family instability on children's readiness, especially as it relates to academic skills, will be less pronounced in the UK context.

Data and Methods

Data from the United States are drawn from the Early Childhood Longitudinal Study-Birth Cohort (ECLS-B). The ECLS-B includes data on approximately 10,700 children born in 2001. Parents were first interviewed in person when the children were about 9 months old and again when children were 2 years and 4 years old and at kindergarten entry. The original birth cohort was broken into two kindergarten cohorts depending on month of birth, with the first cohort beginning kindergarten in fall 2006. Children who entered kindergarten the next year participated in both the 2006 and 2007 interviews. We use outcomes measured in 2007. The household response rate at wave 1 was 74.1%, and the longitudinal response rate (i.e., those respondents who participated at all waves) diminished to 58% at the 2006 kindergarten wave and 53.7 at the 2007 kindergarten wave (i.e., the longitudinal files contain 78% or 74 of all wave 1 respondents, depending on the year in which a child entered kindergarten.) The longitudinal

file includes about 6,350 focal children.[1] These rates account for an intentional 15% sample reduction at the kindergarten wave to reduce costs. Subgroups that were originally oversampled were retained in their entirety.

Data from the United Kingdom are drawn from the first three waves of the Millennium Cohort Study (MCS). The MCS is based on a nationally-representative sample of children born in England, Scotland, Wales, or Northern Ireland between September 2000 and August 2001 (with some additional cases added up to January 2002). The geography of electoral wards was used to identify the sampling frame, and births were identified from Child Benefit records. Clustered samples were drawn from nearly 400 wards, with an oversample of low-income and minority wards. Eighty-two percent of eligible, identified families consented to participate in the first sweep of the study, yielding a sample size of 18,552 families and 18,818 children (including twins and triplets). Families were first interviewed when the child was 9 months old, and were followed up when the child was 3 years old and 5 years old, when most children had entered reception class, the UK equivalent of kindergarten. At the third wave, 79.2% of the original sample participated (N=15,246). In both studies, the analytic sample is restricted to children who have lived continuously with the respondent parent and where the parent has participated in all study waves. This restriction effectively produces a sample of children and their biological mothers, so we have formally restricted our sample to that universe.

Dependent variables

In both studies, school readiness is described by measures of children's behavior and cognitive performance obtained from parent reports, teacher reports, and standardized assessments administered to study children. From each study, we use indicators of verbal and nonverbal ability and aggressive behavior as our outcome measures. In the ECLS-B, verbal

[1] The ECLS-B restricted data license requires users to report Ns to the nearest 50.

ability is measured by children's performance on an early reading assessment that included letter recognition, basic word recognition, and word matching. Mathematics ability in kindergarten was measured by children's performance on an assessment that included problems related to number sense, properties, and operation, measurement, spatial sense, data analysis, and patterns. We use children's scale scores based on item response theory for both assessments. These scores are roughly normally distributed. Children's aggressive behavior is indicated by a scale score constructed from mothers' responses to seven items included in an assessment of children's socioemotional skills and behaviors (α=.79). Items in the assessment were combined from a variety of pre-existing psychometric instruments.

In the MCS, standardized cognitive assessments administered to children are based on the British Ability Scales and measure multiple domains of cognitive development. We focus on children's naming vocabulary, an assessment of children's spoken vocabulary, and pattern construction, an assessment of children's nonverbal reasoning ability. We use children's derived ability scores as outcomes. These scores are roughly normally distributed.

The parent report of children's behavior is based on responses to the Strengths and Difficulties questionnaire. We focus on conduct problems (α=.63). The subscale consists of five items, and parents indicated whether it was not true, sometimes true, or always true that the focal child exhibited the behavior specified in a given item. Components of the summed score were recoded so that the scale score ranges from 0 to 10, with a higher score indicating that a child more often exhibited conduct problems. Children in the analytic sample had significantly higher cognitive scores and lower behavior problem scores compared to children excluded from the analysis, suggesting that any conclusions about the relationship between family structure trajectories and children's school readiness are downwardly biased.

Our outcome measures are not congruent across the two settings. Each study uses a different assessment tool and a different description of the underlying concept tapped by each measure included here. However, we argue that pairs of outcomes across settings roughly approximate common factors. Specifically, both reading ability (ECLS-B) and naming vocabulary (MCS) reflect children's receptive language ability; mathematics ability and pattern construction illustrate nonverbal reasoning ability; and aggressive behavior and conduct problems.

Key independent variables

Family structure. In the first wave of each study, parents reported their union status at the focal child's birth, and a coresident partner at birth was assumed to be the child's biological parent. From that information, we created a three-category measure of family structure at birth: single mother, cohabiting parents, or married parents. At each study wave, respondents reported on their current union status, and cohabiting and married respondents indicated whether their current partner was biologically related to the focal child. We refer to non-related male partners as social fathers here. From that information, we created five-category measures of family structure at each wave: single mother, mother married to biological father, mother cohabiting with biological father, mother married to social father, or mother cohabiting with social father. We treat transitions from cohabitation to marriage as a source of family structure change. The ECLS-B contributes family structure measures captured at five time points (birth plus four waves) and the MCS contributes data from four time points. These variables inform the longitudinal latent class analysis to identify predominant patterns of family structure change in each country.

Selection. Because children were the unit of analysis in each study, no prospective data on parents from prior to the child's birth are available. The best available indicators of selection are attributes of the mother and the child's household obtained when the focal child was nine months old. To account for resources and human capital in the child's household, we included measures of maternal education, whether the household's income was below the nationally-defined poverty threshold, and the number of workers in the household (including only the mother and her spouse/partner as potential workers). Household complexity was described by the number of half-siblings and stepsiblings in a child's household at nine months. For comparison, the number of natural siblings was also included. Maternal depression at nine months was measured by a single item indicator of whether the mother is often miserable or depressed. Maternal age at birth was measured in years. Each study also included an indicator of children's earlier cognitive ability, measured at nine months for children in the ECLS-B and at age 3 for children in the MCS. (The analysis of U.S. also includes a count of mothers' prior marriages. The MCS analysis will be amended to include a parallel measure.) In a future version, an appendix will include more details on variable measurement in each study.

Family context. Indicators of family context reflect household resources over time and the emergence of family routines. We accounted for long-term exposure to poverty (number of waves in poverty in the US sample and whether in poverty at waves 1 and 3 in the UK sample). The child's exposure to parents' or parent figures' employment was indicated by whether the child's household had no employed parent at the first or last wave, gained employed parents, lost employed parents, or kept the same number of employed parents between the first and third wave. Added family complexity by school entry was measured by the number of full siblings, half-siblings and stepsiblings a child gained since wave 1. Long-term exposure to maternal

depression was based on maternal self-reports in the first and last waves of each study. In the UK data, a family involvement scale includes indicators of whether the focal child and at least one parent engage in cultural activities, library visits, organized activities, physical exercise, or other family time on a regular basis at sweep 3 (range=0 to 5). In the United States, family involvement was indicated by mothers' singing, storytelling, and play with children in each wave and by children's organized activities outside the home at age 4 (preschool wave).

Ecological change. Measures of ecological change captured transitions outside of the nuclear household that co-occur with family structure change. Coresidence with extended kin was measured by indicators of grandparents' and other adults' entrance into and exit from the child's household. Residential mobility by school entry was represented by a count of all of the residential moves reported by the mother since the first wave of each study. Neighborhood quality was measured at the first and last waves by mother's report of whether she was dissatisfied with her neighborhood as a place to raise children and had four categories: satisfied at both times, dissatisfied at both times, became more satisfied over time, or became less satisfied. Subsequent analyses will also account for changes in child care arrangements over time.

Methods

We anticipate that the dynamic nature of family structure in early childhood is best characterized by a multiplicity of trajectories, rather than by a single trajectory. In fact, describing the variation in the five timepoints of the ECLS-B implies that children may be exposed to any one of nearly 2000 family structure trajectories (3x5x5x5x5=1875). We use longitudinal latent class analysis (LLCA) procedures in M-Plus (version 6) to determine whether there are discernible, empirically robust patterns in family instability that would explain within-

group variation in the effects of family structure change on child development. Broadly speaking, latent class analytic methods are used to classify related observations into subgroups, or classes, based on common patterns in multivariate, categorical data. The motivation for using LLCA is based on the expectation that children are not drawn from a single population defined by a common growth trajectory for exposure to conditions like family structure change. The analyst determines the optimal number of classes (or patterns) to emerge from the data based on model fit statistics, parsimony, and face validity. For a given number of classes, the procedure produces a multinomial variable that assigns respondents to the class to which they have the highest probability of belonging. We use this information in our univariate and bivariate descriptive analysis. The procedure also produces a set of probabilities that describe a respondent's likelihood of being in each class. We use these probabilities as indicators of attachment to specific family structure trajectories in our multivariate regressions in order to capture the variation in the likelihood of membership within each class.

We use ordinary least squares regression to estimate children's predicted scores on outcome measures as a function of family structure trajectories and explanatory factors for five of six outcome measures: reading ability, math ability, and aggressive behavior problems in the United States, and naming vocabulary and pattern construction in the United Kingdom. For conduct problems in the United Kingdom only, we use Poisson regression because of the skewed nature of the dependent variable.

Results

Family structure trajectories

Note: descriptive statistics for independent variables from each sample and fit statistics for the longitudinal latent class analysis are not included here.

The first column of Table 1 describes the classes that emerged from the LCCA analysis: eight in the United Kingdom and nine in the United States. Fit statistics for each sample indicated that these were the optimal solutions for each data set, and supplementary analyses using demographic indicators to predict class membership suggested that the classifications were valid. The two countries share seven classes. The first three describe children who fall into a steady state of marriage, cohabitation, or single parenthood up to school entry. Together those classes characterize 82% of children at school entry in each country. However, those union statuses are distributed differently across contexts. Children in the United States are more likely to reside with married biological parents or a single mother compared to children in the United Kingdom, who more often reside with continuously cohabiting biological parents.

The balance of children experience some change in family structure by age 5. In the United Kingdom, about half of those children (9.3% of the 18% experiencing change) see their biological parents enter into a union or transition from cohabitation to marriage. The other half see their parents' union (either a cohabiting union or a marriage) dissolve. By mapping class memberships onto the original data, we determined that about 20% of mothers who transitioned out of a marriage or cohabitation repartnered with a social father by the time the focal child has entered school. However, no distinct class emerged for repartnering in the United Kingdom.

Compared to the United Kingdom, a similar share of children in the United States experienced married or cohabiting parents' union dissolution (8.6%), but fewer children experienced a cohabiting parents' transition to marriage (5.5% of all children). In the United States, cohabiting parents were somewhat more likely to transition to marriage early rather than later, while the pattern was reversed in the United Kingdom. Two distinctive classes emerged in the United States to capture mothers' (re)partnering with social fathers by school entry,

representing about 4% of all children. These two classes captured what is typically described as family instability, or repeated changes in children's family structure.

The remainder of Table 1 reports group means and standard deviations on outcome measures for each family structure class. Unless noted by a carat, group differences compared to children residing with continuously married biological parents *were* statistically significant at $p<.05$. Nearly all non-continuously married groups were disadvantaged at school entry on cognitive and behavior indicators in both countries, with group means on each indicator that were between one-fifth and one-half of a standard deviation lower than those for the comparison group. For children in the United States, the most disadvantaged children were in the "bio cohabiting to social cohabiting" class, while the most disadvantaged children in the United Kingdom resided with continuously single mothers. In the United States only, spending some time with married biological parents (either those who cohabited and later married or those who started off married and later divorced) was associated with cognitive scores that were comparable to those for children with continuously married parents.

Multivariate analysis

Multivariate results are summarized in tables 2 through 7. Tables 2 through 4 pertain to children in the United States and consider reading ability, math ability, and aggressive behavior, respectively. In each table, the first panel describes baseline models that include the probabilities for membership in each family structure trajectory (compared to biological parents' steady marriage) and control for child age at kindergarten interview, child gender, mother's race/ethnicity, and whether the child's household primarily spoke English. The second panel adds selection indicators, the third accounts for family context, and the fourth accounts for ecological instability.

The baseline models in tables 2 (verbal ability) and 3 (math ability) show a strong negative association between specific family structure trajectories and cognitive achievement. Most notably, all family structure trajectories that do not involve biological parents' marriage predict verbal scores that are about one-half of a standard deviation lower compared to predicted scores for children with continuously married parents. Children who entered their parents' biological marriage through cohabitation or who experienced separation or divorce have similar predicted cognitive scores compared to children with continuously married parents. (One exception emerges in table 3 for children who experience an early transition from cohabitation to marriage, $p<.05$). Accounting for selection (panel 2) explains a great deal of these group differences. Young maternal age, low maternal education, larger family sizes, and a higher likelihood of experiencing poverty when the focal child was an infant occurred more often in nonmarital forms, and these attributes, rather than family structure itself, have a more direct association with children's cognitive development.

The negative associations with each cognitive outcome that remain after accounting for selection pertain to children who spend time in single-parent or more unstable family structures. These associations are explained in panel 3 by long-term exposure to poverty and lower scores on indicators of enduring family routines. Measures of ecological change (panel 4) improve model fit ($R^2=.33$) but do not further explain family structure's association with cognitive development. One striking finding is that children whose parents transitioned from cohabitation to marriage relatively late (i.e., after a child is 2 years old) have significantly higher predicted math scores compared to children with continuously married parents in the full model.

Table 4 considers children's predicted aggressive behavior scores in the United States. While the baseline models for cognitive outcomes suggested that exposure to marriage was the

primary factor in describing variation in children's scores, these results suggest that time in a single-parent family was more salient. Children who resided with a single mother continuously or after a union ended or who experienced frequent instability (the bio cohabiting to social cohabiting group) had significantly higher aggressive behavior problems compared to children with continuously married parents. Group differences were greatest for children in the frequent instability class. (Note, however, that children who transitioned from living with a single mother to marriage with a social father do not fit this pattern).

Unlike with cognitive outcomes, selection factors have relatively little explanatory power (panel 2). Family context is more influential. Maternal depression in infancy, at school entry, or in both periods is positively associated and family routines, and activities outside the home at age 4 are negatively associated with children's aggressive behavior problems. Accounting for these factors reduced the magnitude of family structure coefficients by one-third to one-half compared to panel 2. Indicators of ecological change did not significantly improve model fit. A higher probability of being in the frequent instability group remains statistically significant ($p<.05$) after taking all factors into account. This finding is consistent with prior research that has found a persistent association between repeated family structure change and children's behavior, including externalizing problems and delinquency.

The pattern of results from the United Kingdom (tables 5 to 7) is generally consistent with findings from the United States, although *all* family structure categories were associated with lower predicted cognitive scores and higher predicted conduct problem scores at school entry in baseline models (with the exception of the association between later cohabitation to marriage and pattern construction scores). (Note: This may be a function of larger sample sizes in the MCS data set.) Accounting for selection factors explained a substantial share of group

differences in naming vocabulary scores and all of the difference in pattern construction scores. The family structure groups that continued to have a negative association with naming vocabulary are distinctive compared to children in the United States: children with steadily cohabiting parents, cohabiting parents who transition to early marriage, or parents who separate or divorce. Those significant associations remained after accounting for family context and ecological change.

As in the United States, the factors that explained the association between family structure trajectories and children's conduct problems were distinct and less effective compared to the models for cognitive development. Selection factors explained between one-third and one-half of group differences, but all family structure trajectories except "single to bio cohabiting" remained significantly positively associated with conduct problems at least at $p<.05$. Salient selection factors measured when the focal child was an infant include poverty status, maternal depression, family size, and family complexity. In terms of reducing the magnitude of the coefficients associated with family structure trajectories, family context indicators have less explanatory power in the UK sample than in the US sample, and accounting for ecological change has virtually no influence. In the full model, four categories retained a small but significant association with conduct problems, with classification in each predicting conduct problem scores approximately 5% higher compared to children in continuously married parent families.

Discussion

Prior research has established that family structure change and family instability in early childhood are negatively associated with children's school readiness in the United States. We add to this research by conceptualizing family structure trajectories in a longitudinal latent class

framework and by offering a cross-national comparison between the United States and the United Kingdom, two countries that share similar family structure profiles in distinctive social contexts. We compared the association between family structure trajectories and children's verbal and nonverbal ability and aggressive behavior during their first year of formal schooling. Data are drawn from nationally representative, longitudinal samples of children born at the beginning of the last decade.

We reported three main findings. First, the longitudinal latent class analysis confirmed that in the main, the United States and the United Kingdom are characterized by similar family structure trajectories: the two countries shared seven family structure classes that characterized over 95% of children in each country. However, the two countries are distinct in the distribution of those family structures in their populations. Long-term cohabitation and slower transitions from cohabitation to marriage were more prevalent in the United Kingdom, reflecting the more institutionalized role of cohabitation in British compared to American culture (Kiernan, 2002). Children in the United States more often experienced long-term single mother status, and transitions from cohabitation to marriage more often happened early in a child's life. The United States was also distinctive in the prevalence of family turbulence and the presence of social fathers in children's lives. About 4% of mothers transition into a cohabiting union or marriage by the time their children enter school. This finding is consistent with Cherlin's (2009) assertion that American families are distinct from their European counterparts in their high levels of union dissolution and union formation. Although coresidence with social fathers also occurred in the United Kingdom, the prevalence was lower, and no classes emerged in our analysis that were uniquely defined by the presence of social fathers in children's households.

Second, we found that family structure change and family instability were associated with each of our outcomes in both contexts, and the explanatory factors were similar. Selection factors, including maternal age and education and early household poverty, largely explained the association between nonmarital family forms and discontinuous marriage trajectories on the one hand and verbal and nonverbal ability on the other. In both countries, family context better explained the association between family structure trajectories and aggressive behavior/conduct problems, but overall, these associations were less amenable to explanation than were measures of cognitive achievement. In the United States, the category that might best fit the family instability label maintained a small but persistent association with aggressive behavior. In the United Kingdom, the story was less about family structure change and more about time spent outside of marriage. Children who lived only with cohabiting or single mothers exhibited elevated conduct problems at school entry compared to children with continuously married biological parents.

Although these results are preliminary, it is also worth noting that in the United States, but not in the United Kingdom, any time spent in marriage appears to have been beneficial for children's cognitive achievement. Even before accounting for selection attributes, children whose cohabiting parents later transitioned to marriage or whose parents' marriage eventually ended had similar verbal and nonverbal ability scores compared to children who lived with married parents continuously. While the lack of statistically significant group differences may be a function of small cell sizes, the magnitude of the associated coefficients is sufficiently small to suggest the absence of a relationship. These findings raise important questions about the early effect of marriage on children's well-being in the longstanding debate about the relative importance of selective and protective effects to explain children's greater well-being in

marriage compared to other family forms. However, it is important to note that this same pattern of results is not present in the United Kingdom. To the extent that marriage may be a protective family form, we need to consider why that protection would be bound only to one country. By unpacking what makes marriage a protective institution in the United States, we can better articulate how the larger social structure privileges specific institutions in ways that create disproportionate advantage for their members at the expense of the excluded class.

Our third finding is that, overall, a larger percentage of children in the United States than in the United Kingdom may be disadvantaged by nonmarital family structure trajectories. American children are more likely to live long-term with single mothers, to experience the dissolution of a cohabiting union, or to experience family structure change that culminates in coresidence with social fathers. We conclude that while the penalty for living outside of a continuously married family is similar in the two contexts, that penalty is more often realized in the United States.

This study has several important limitations. First, neither the dependent nor the independent variables are identical in the two studies, and we cannot be certain that national differences are not attributable to differences in measurement. However, the broad similarity in our results cross-nationally provides some measure of confidence. Second, in the effort to construct parallel models, we have omitted valuable information that is unique to each study. For example, the ECLS-B contains many other measures of family process beyond those considered here that may better inform the aggressive behavior model. The MCS contains retrospective data to construct complete union histories, rather than relying on cross-sectional measures as we do here. Third, we have not yet developed measures of child care arrangements as indicators of ecological change, nor have we formally engaged the question of whether the United Kingdom's

nearly universal preschool program softens the effects of family structure instability on children's development. Fourth, we need to complete an attrition analysis for the ECLS-B sample and consider multiple imputation options for both samples to minimize bias. Despite these shortcomings, this research adds to literature on family structure and child well-being by using innovative methods and a cross-national design to demonstrate broad patterns of association between nonmarital family trajectories and children's school readiness.

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Table 1. Predicted class membership and average outcome scores by class membership, United States and United Kingdom

United States (ECLS-B)	Proportion in class	Reading score mean	SD	Math score mean	SD	Aggressive behavior	SD	N
Steady bio parents married	0.600	46.84	13.93	46.24	9.81	15.38	3.92	~3150
Steady bio parents cohabiting	0.075	39.31	14.60	40.27	10.51	15.77	4.73	~350
Steady single mother	0.146	39.52	13.59	40.04	9.33	16.86	4.99	~750
Early cohabitation to marriage	0.035	43.05	13.12	42.77	9.39	15.38	3.84	~150
Later cohabitation to marriage	0.020	44.62^	13.91	43.98^	9.31	15.51	3.73	~100
Married to single	0.057	44.87^	13.21	44.87^	9.46	16.81	4.32	~250
Cohabiting to single	0.029	38.10	13.39	40.71	10.21	16.56	4.90	~150
Bio cohabiting to social cohabiting	0.019	36.68	12.02	39.81	10.16	17.98	4.59	~100
Single to social married	0.019	39.18	16.30	40.88	10.48	15.12	4.98	~100

United Kingdom (MCS)	Proportion in class	Naming vocabulary mean	SD	Pattern construction mean	SD	Conduct problems mean	SD	N
Steady bio parents married	0.572	111.59	14.93	90.29	18.07	1.77	1.61	6841
Steady bio parents cohabiting	0.122	108.72	13.80	88.18	19.13	2.15	1.72	1399
Steady single mother	0.126	104.82	14.53	82.95	21.04	2.63	1.99	1485
Early cohabitation to marriage	0.023	106.08	16.03	85.16	17.84	2.15	1.71	309
Later cohabitation to marriage	0.057	109.66	13.71	89.39^	17.93	2.14	1.88	642
Married to single	0.033	106.82	16.22	87.68	17.70	2.21	1.80	384
Cohabiting to single	0.054	108.73	12.22	86.05	20.48	2.41	1.94	603
Single to bio cohabiting	0.013	107.91	13.41	86.79	18.21	2.45	1.84	173

^Group difference compared to steady bio parents married was *not* significant (p<.05).

Table 2. Ordinary least squares regressions predicting children's reading scores in kindergarten, ECLS-B

	Baseline			Selection			Family Context			Ecological Change		
(compared to steady marriage)	Coef.	Std. Err.		Coef.	Std. Err.		Coef.	Std. Err.		Coef.	Std. Err.	
Steady bio parents cohabiting	-5.563	1.075	***	-1.533	1.122		-1.079	1.089		-0.903	1.073	
Steady single mother	-6.434	0.889	***	-2.410	0.970	*	-1.217	0.983		-1.016	0.956	
Early cohabitation to marriage	-2.174	1.332		1.403	1.551		1.406	1.498		1.553	1.570	
Later cohabitation to marriage	-0.047	1.924		1.943	1.616		2.398	1.571		2.510	1.561	
Married to single	-2.081	1.259		0.604	1.203		1.116	1.238		1.410	1.233	
Cohabiting to single	-7.948	1.453	***	-4.473	1.351	**	-2.380	1.441		-2.101	1.436	
Bio cohabiting to social cohabiting	-9.301	1.739	***	-3.849	1.569	*	-2.696	1.626		-2.213	1.659	
Single to social married	-6.856	2.128	***	-3.182	1.869	+	-3.521	1.901	+	-3.350	1.942	+
Child age at KG interview	0.960	0.056	***	0.964	0.052	***	0.979	0.050	***	0.983	0.050	***
Child is male	-1.700	0.514	***	-1.862	0.490	***	-1.307	0.499	*	-1.255	0.495	*
Child is black/African-American	-1.427	0.728		0.915	0.710		1.675	0.734	*	1.689	0.742	*
Child is Hispanic (any race)	-4.000	0.798	***	-1.556	0.797		-1.222	0.732	+	-1.075	0.756	
Child is other race	1.941	0.944	*	1.949	0.856	*	2.355	0.859	***	2.412	0.873	**
Household is non-English speaking	-1.221	0.848		-0.274	0.836		0.410	0.872		0.445	0.878	
Mom's age at birth				0.182	0.051	***	0.120	0.055		0.098	0.056	+
Mother's ed <HS				-2.998	0.683	***	-2.169	0.711	**	-2.168	0.712	**
Mother's ed some college				2.555	0.628	***	1.916	0.652	**	1.928	0.657	**
Mother's ed college plus				6.825	0.722	***	5.966	0.749	***	5.931	0.763	***
Child's mental score, 9 months				0.065	0.029	*	0.061	0.028	*	0.059	0.028	*
# full sibs, w1				-1.440	0.257	***	-1.210	0.285	***	-1.228	0.285	***
# half sibs, w1				-1.061	0.480	*	-1.134	0.488	*	-1.157	0.495	*
# step sibs, w1				-0.409	1.206		0.066	1.162		0.153	1.182	
Household in poverty at wave 1				-3.850	0.683	***						
Mom moderately/severely depressed w1				-0.597	0.657							
# of workers in HH, w1 (0-2)				-0.043	0.435							
# of prior marriages				-2.278	0.864	*						

# full sibs gained since birth							-0.222	0.395		-0.200	0.390	
# half sibs gained since birth							-0.293	0.740		-0.192	0.747	
# step sibs gained since birth							-0.582	1.377		-0.649	1.377	
# waves in poverty							-1.370	0.259	***	-1.306	0.270	***
Mother depressed at w1 only							-0.424	0.796		-0.348	0.808	
Mother depressed at KG only							-1.207	0.845		-1.166	0.843	
Mother depressed both waves							-1.037	1.102		-0.946	1.105	
HH gained workers since birth							-0.041	0.545		-0.014	0.562	
HH lost workers since birth							-0.963	0.712		-0.930	0.723	
HH never had workers							-2.823	1.158	*	-2.888	1.161	
R sings/tells stories to child regularly							2.314	0.529	***	2.326	0.532	***
R plays/caregives at wave 3							-0.120	0.048	*	-0.129	0.047	**
Child involved in activities outside home, wave 3							0.848	0.202	***	0.848	0.203	***
Household added grandparents										0.132	0.919	
Household lost grandparents										0.387	0.881	
Household added other adults										0.032	0.911	
Household lost other adults										-1.270	0.881	
Total moves, wave 1 to kindergarten										-0.200	0.160	
Neighborhood safe at wave 2 only										-0.943	0.945	
Neighborhood safe at KG only										-0.184	0.883	
Neighborhood never safe										-0.302	0.583	
Intercept	-16.993	3.791	***	-29.188	4.833	***	-26.949	5.047	***	-25.895	5.093	***
	N~5250			N~5250			N~5250			N~5250		
	r=.17			r=.27			r=.28			r=.29		

Table 3. Ordinary least squares regressions predicting children's mathematics scores in kindergarten, ECLS-B

	Baseline			Selection			Family Context			Ecological Change		
(compared to steady marriage)	Coef.	Std. Err.		Coef.	Std. Err.		Coef.	Std. Err.		Coef.	Std. Err.	
Steady bio parents cohabiting	-3.755	0.868	***	-0.527	0.818		-1.079	1.089		-0.067	0.788	
Steady single mother	-4.314	0.522	***	-1.109	0.554	*	-1.217	0.983		-0.135	0.528	
Early cohabitation to marriage	-2.191	0.988	*	0.624	1.057		1.406	1.498		0.743	1.178	
Later cohabitation to marriage	0.000	1.004		1.879	0.904	*	2.398	1.571		2.360	0.896	*
Married to single	-1.377	0.879		0.597	0.779		1.116	1.238		0.932	0.826	
Cohabiting to single	-4.150	1.136	***	-1.244	1.058		-2.380	1.441		0.269	1.077	
Bio cohabiting to social cohabiting	-5.191	1.485	**	-0.784	1.377		-2.696	1.626		0.614	1.542	
Single to social married	-4.456	1.390	**	-1.630	1.313		-3.521	1.901	+	-1.598	1.276	
Child age at KG interview	0.716	0.043	***	0.718	0.042	***	0.979	0.050	***	0.730	0.040	***
Child is male	-0.347	0.341		-0.384	0.314		-1.307	0.499	*	0.074	0.323	
Child is black/African-American	-3.895	0.568	***	-2.312	0.515	***	1.675	0.734	*	-1.827	0.519	**
Child is Hispanic (any race)	-4.354	0.571	***	-2.670	0.529	***	-1.222	0.732	+	-2.318	0.538	***
Child is other race	-0.501	0.679		-0.537	0.613		2.355	0.859	***	-0.236	0.611	
Household is non-English speaking	-0.999	0.626		-0.112	0.613		0.410	0.872		0.430	0.624	
Mom's age at birth				0.109	0.035	**	0.120	0.055	*	0.049	0.037	
Mother's ed <HS				-2.392	0.491	***	-2.169	0.711	**	-1.801	0.534	**
Mother's ed some college				2.292	0.446	***	1.916	0.652	**	1.868	0.465	***
Mother's ed college plus				5.335	0.500	***	5.966	0.749	***	4.601	0.513	***
Child's mental score, 9 months				0.068	0.017	***	0.061	0.028	*	0.063	0.017	***
# full sibs, w1				-0.450	0.161	**	-1.210	0.285	***	-0.342	0.182	+
# half sibs, w1				-0.552	0.399		-1.134	0.488	*	-0.617	0.425	
# step sibs, w1				-0.076	0.639		0.066	1.162		0.299	0.653	
Household in poverty at wave 1				-2.904	0.456	***						
Mom moderately/severely depressed w1				-0.481	0.511							
# of workers in HH, w1 (0-2)				-0.182	0.299							
# of prior marriages				-1.342	0.468	**						

# full sibs gained since birth							-0.222	0.395		-0.345	0.234	
# half sibs gained since birth							-0.293	0.740		-0.578	0.567	
# step sibs gained since birth							-0.582	1.377		-0.729	0.987	
# waves in poverty							-1.370	0.259	***	-0.973	0.167	***
Mother depressed at w1 only							-0.424	0.796		-0.235	0.551	
Mother depressed at KG only							-1.207	0.845		-0.649	0.572	
Mother depressed both waves							-1.037	1.102		-0.509	0.766	
HH gained workers since birth							-0.041	0.545		0.007	0.372	
HH lost workers since birth							-0.963	0.712		-0.616	0.501	
HH never had workers							-2.823	1.158	*	-1.139	0.980	
R sings/tells stories to child regularly							2.314	0.529	***	1.161	0.291	***
R plays/caregives at wave 3							-0.120	0.048	*	-0.125	0.035	**
Child involved in activities outside home, wave 3							0.848	0.202	***	0.805	0.159	***
Household added grandparents										0.338	0.640	
Household lost grandparents										-0.003	0.597	
Household added other adults										0.211	0.697	
Household lost other adults										-1.025	0.568	+
Total moves, wave 1 to kindergarten										-0.042	0.123	
Neighborhood safe at wave 2 only										-0.966	0.690	
Neighborhood safe at KG only										-0.533	0.526	
Neighborhood never safe										-0.650	0.371	+
Intercept	-1.260	2.978	0.673	-11.713	3.322	***	-26.949	5.047	***	-8.252	3.581	*
	N~5250			N~5250			N~5250			N~5250		
	r=.21			r=.31			r=.28			r=.33		

Table 4. Ordinary least squares regressions predicting children's aggressive behavior scores in kindergarten, ECLS-B

	Baseline			Selection			Family Context			Ecological Change		
(compared to steady marriage)	Coef.	Std. Err.		Coef.	Std. Err.		Coef.	Std. Err.		Coef.	Std. Err.	
Steady bio parents cohabiting	0.148	0.392		-0.347	0.385		-0.492	0.382		-0.547	0.386	
Steady single mother	1.541	0.303	***	1.284	0.340	***	0.688	0.339	*	0.615	0.349	+
Early cohabitation to marriage	-0.249	0.434		-0.594	0.398		-0.730	0.386	+	-0.688	0.401	+
Later cohabitation to marriage	-0.034	0.546		-0.528	0.515		-0.652	0.464		-0.639	0.461	
Married to single	1.386	0.414	**	1.147	0.405	**	0.615	0.403		0.549	0.397	
Cohabiting to single	1.090	0.545	*	0.633	0.569		0.061	0.561		-0.015	0.555	
Bio cohabiting to social cohabiting	2.928	0.602	***	2.360	0.657	**	1.574	0.666	*	1.450	0.677	*
Single to social married	0.071	0.766		-0.167	0.764		-0.718	0.763		-0.781	0.750	
Child age at KG interview	-0.064	0.017	***	-0.066	0.016	***	-0.067	0.016	***	-0.066	0.016	***
Child is male	1.728	0.151	***	1.723	0.150	***	1.574	0.154	***	1.558	0.154	***
Child is black/African-American	-0.145	0.229		-0.421	0.232		-0.648	0.225	**	-0.665	0.243	**
Child is Hispanic (any race)	0.179	0.281		-0.084	0.288		-0.174	0.275		-0.221	0.276	
Child is other race	-0.065	0.307		-0.122	0.292		-0.302	0.289		-0.323	0.290	
Household is non-English speaking	-0.079	0.286		-0.066	0.288		-0.172	0.271		-0.226	0.275	
Mom's age at birth				-0.028	0.016	+	-0.015	0.016		-0.012	0.016	
Mother's ed <HS				0.065	0.284		-0.303	0.286		-0.314	0.283	
Mother's ed some college				-0.104	0.213		0.119	0.191		0.122	0.191	
Mother's ed college plus				-0.461	0.234	+	-0.029	0.218		0.007	0.222	
Child's mental score, 9 months				-0.034	0.007	***	-0.031	0.008	***	-0.030	0.008	***
# full sibs, w1				0.078	0.091		0.025	0.091		0.031	0.090	
# half sibs, w1				0.157	0.145		0.092	0.141		0.101	0.141	
# step sibs, w1				1.270	0.215	***	1.062	0.201	***	1.032	0.209	***
Household in poverty at wave 1				0.512	0.196	*						
Mom moderately/severely depressed w1				1.197	0.214	***						
# of workers in HH, w1 (0-2)				0.356	0.145	*						
# of prior marriages				0.042	0.281							

# full sibs gained since birth							0.207	0.118	+	0.196	0.117	+
# half sibs gained since birth							0.519	0.308	+	0.504	0.302	+
# step sibs gained since birth							1.919	0.751	*	1.961	0.752	*
# waves in poverty							0.168	0.069	*	0.146	0.072	*
Mother depressed at w1 only							0.751	0.245	**	0.717	0.247	**
Mother depressed at KG only							2.159	0.315	***	2.141	0.322	***
Mother depressed both waves							2.188	0.348	***	2.177	0.349	***
HH gained workers since birth							0.143	0.166		0.138	0.171	
HH lost workers since birth							0.631	0.227	**	0.620	0.225	**
HH never had workers							0.472	0.525		0.503	0.527	
R sings/tells stories to child regularly							-0.878	0.167	***	-0.871	0.167	***
R plays/caregives at wave 3							-0.046	0.021	*	-0.042	0.021	*
Child involved in activities outside home, wave 3							-0.242	0.067	***	-0.242	0.067	***
Household added grandparents										-0.224	0.370	
Household lost grandparents										-0.274	0.302	
Household added other adults										0.514	0.279	+
Household lost other adults										0.303	0.308	
Total moves, wave 1 to kindergarten										0.018	0.053	
Neighborhood safe at wave 2 only										0.495	0.314	
Neighborhood safe at KG only										0.249	0.235	
Neighborhood never safe										0.206	0.180	
Intercept	18.897	1.167	***	21.889	1.469	***	23.237	1.443	***	22.860	1.432	***
	N~5350			N~5350			N~5350			N~5350		
	r=.07			R=.10			r=.15			r=.15		

Table 5. Ordinary least squares regressions predicting children's naming vocabulary in reception class, MCS

	Baseline		Selection		Family Context		Ecology	
Family structure history (vs steady marbio)								
Steady bio parents cohabiting	-3.939***	[0.474]	-1.308**	[0.423]	-1.286**	[0.422]	-1.237**	[0.421]
Steady single mother	-7.390***	[0.525]	-0.526	[0.614]	-0.45	[0.657]	-0.267	[0.672]
Early cohabitation to marriage	-5.858***	[1.160]	-2.583**	[0.952]	-2.692**	[0.954]	-2.609**	[0.950]
Later cohabitation to marriage	-2.486***	[0.645]	-0.773	[0.583]	-0.741	[0.591]	-0.668	[0.596]
Married to single	-5.193***	[0.872]	-2.048*	[0.815]	-1.988*	[0.826]	-1.597	[0.825]
Cohabiting to single	-4.665***	[0.673]	-1.079	[0.585]	-1.075	[0.610]	-0.71	[0.607]
Single to bio cohabiting	-4.481**	[1.531]	1.251	[1.418]	0.965	[1.395]	1.046	[1.395]
Child age at school entry interview	9.532***	[0.648]	9.643***	[0.543]	9.629***	[0.539]	9.706***	[0.539]
Child is male	0.800**	[0.308]	-0.134	[0.284]	-0.112	[0.284]	-0.128	[0.283]
Mother's race (compared to white)								
Mixed	-4.324**	[1.659]	-3.525*	[1.496]	-3.498*	[1.478]	-3.439*	[1.507]
Indian	-6.055***	[1.625]	-5.111***	[1.323]	-5.119***	[1.312]	-5.002***	[1.316]
Pakistani	-17.201***	[1.753]	-10.420***	[1.348]	-10.306***	[1.368]	-10.307***	[1.364]
Bangladeshi	-17.231***	[3.256]	-9.230***	[2.693]	-9.066**	[2.752]	-9.234***	[2.757]
Black Caribbean	-5.136**	[1.645]	-4.058**	[1.411]	-4.075**	[1.424]	-4.092**	[1.415]
Black African	-7.597***	[1.411]	-7.483***	[1.288]	-7.324***	[1.314]	-7.221***	[1.305]
Other ethnic group	-7.356***	[1.958]	-8.761***	[1.875]	-8.648***	[1.850]	-8.555***	[1.831]
Mother is foreign born	-2.372**	[0.830]	-2.028**	[0.679]	-2.014**	[0.680]	-1.946**	[0.679]
Mother's age at birth			0.129***	[0.027]	0.124***	[0.028]	0.107***	[0.029]
Mother's education (vs NVQ level 2)								
No qualifications			-2.652***	[0.598]	-2.523***	[0.593]	-2.542***	[0.595]
NVQ level 1			-1.300*	[0.527]	-1.257*	[0.527]	-1.287*	[0.526]
NVQ level 3			0.685	[0.406]	0.654	[0.408]	0.649	[0.409]
NVQ level 4			2.497***	[0.359]	2.476***	[0.359]	2.486***	[0.357]
NVQ level 5			3.502***	[0.746]	3.464***	[0.741]	3.463***	[0.739]
Overseas qualifications only			-3.305**	[1.264]	-3.180*	[1.239]	-3.125**	[1.205]

Bracken school readiness score, age 3			0.380***	[0.013]	0.378***	[0.013]	0.380***	[0.013]
# of natural sibs at birth			-1.928***	[0.315]	-2.061***	[0.410]	-2.077***	[0.412]
# of half sibs at birth			-2.397***	[0.509]	-2.506***	[0.537]	-2.414***	[0.536]
# of step sibs at birth			-1.041	[1.256]	1.087	[1.542]	1.146	[1.538]
Wave 1 poverty			-1.557***	[0.450]	-1.450***	[0.423]	-1.405***	[0.418]
Mother depressed at wave 1			-0.833	[0.488]				
No workers in HH at wave 1			-0.667	[0.540]				
1 worker in HH at wave 1			0.223	[0.327]				
# of full sibs gained by school entry					-0.265	[0.378]	-0.286	[0.379]
# of half sibs gained by school entry					-0.17	[0.527]	-0.146	[0.523]
# of step sibs gained by school entry					2.173	[1.348]	2.283	[1.351]
Poverty at wave 3					-0.349	[0.357]	-0.3	[0.351]
Mother depressed at wave 1 only					-0.373	[0.530]	-0.299	[0.521]
Mother depressed at school entry only					-0.569	[0.517]	-0.489	[0.521]
Mother depressed at both waves					-1.616*	[0.795]	-1.425	[0.784]
Household gained workers by school					0.369	[0.652]	0.385	[0.644]
Household lost workers by school					0.181	[0.585]	0.19	[0.577]
Household never had workers					-1.398*	[0.668]	-1.393*	[0.666]
Family involvement					-0.138	[0.194]	-0.143	[0.195]
Household gained grandparents							-1.883	[1.631]
Household lost grandparents							0.264	[0.826]
Household gained other adults							-1.852	[1.020]
Household lost other adults							0.21	[1.005]
Total residential changes by school							-0.338*	[0.168]
Neighborhood quality								
Lower-quality neighborhood at school entry							-1.257	[0.777]
Better neighborhood at school entry							-0.939	[0.561]
Neighborhood poor at both waves							-0.82	[1.389]
Intercept	63.289***	[3.398]	54.045***	[3.240]	53.185***	[3.585]	53.366***	[3.571]
N	10735		10735		10735		10735	

Fit statistics still need to be copied over to tables.

* p<0.05, **p<0.01, *** p<0.001

Table 6. Ordinary least squares regressions predicting children's pattern construction in reception class, MCS

	Baseline		Selection		Family Context		Ecology	
Family structure history (vs steady marbio)								
Steady bio parents cohabiting	-2.296***	[0.638]	0.09	[0.594]	0.286	[0.592]	0.337	[0.591]
Steady single mother	-7.284***	[0.734]	-1.19	[0.942]	-0.405	[0.985]	-0.492	[1.023]
Early cohabitation to marriage	-4.351**	[1.357]	-1.404	[1.195]	-1.303	[1.224]	-1.292	[1.233]
Later cohabitation to marriage	-0.657	[0.798]	0.924	[0.784]	1.165	[0.779]	1.274	[0.774]
Married to single	-3.486**	[1.121]	-1.23	[1.039]	-0.379	[1.064]	-0.261	[1.078]
Cohabiting to single	-5.151***	[1.134]	-2.092	[1.089]	-1.322	[1.093]	-1.078	[1.076]
Single to bio cohabiting	-4.072*	[1.859]	0.97	[1.898]	0.973	[1.934]	0.997	[1.949]
Child age at school entry interview	14.125***	[0.894]	14.174***	[0.823]	14.187***	[0.815]	14.331***	[0.813]
Child is male	3.222***	[0.391]	2.369***	[0.377]	2.374***	[0.372]	2.366***	[0.369]
Mother's race (compared to White)								
Mixed	-5.762*	[2.845]	-5.056	[2.742]	-5.108	[2.758]	-5.05	[2.762]
Indian	-2.627	[1.645]	-1.844	[1.681]	-1.608	[1.685]	-1.836	[1.686]
Pakistani	-8.846***	[1.365]	-3.466**	[1.144]	-2.670*	[1.192]	-2.995*	[1.220]
Bangladeshi	-6.849*	[3.470]	-0.78	[2.961]	0.055	[3.072]	-0.364	[3.099]
Black Caribbean	-5.047*	[2.404]	-4.148	[2.136]	-3.669	[2.167]	-3.616	[2.178]
Black African	-7.854*	[3.481]	-7.775*	[3.527]	-7.184*	[3.517]	-7.091*	[3.503]
Other ethnic group	2.738	[1.677]	1.613	[1.772]	1.908	[1.758]	1.933	[1.749]
Mother is foreign born	1.522	[0.800]	1.967*	[0.790]	2.199**	[0.803]	2.212**	[0.803]
Mother's age at birth			-0.01	[0.042]	-0.025	[0.042]	-0.037	[0.042]
Mother's education (vs NVQ level 2)								
No qualifications			-3.788***	[0.774]	-3.386***	[0.773]	-3.442***	[0.775]
NVQ level 1			-3.175***	[0.804]	-3.032***	[0.804]	-3.086***	[0.796]
NVQ level 3			0.095	[0.652]	-0.018	[0.646]	-0.045	[0.646]
NVQ level 4			1.752***	[0.490]	1.467**	[0.489]	1.465**	[0.486]
NVQ level 5			2.156*	[0.957]	1.890*	[0.957]	1.898*	[0.951]

Overseas qualifications only			-2.869*	[1.340]	-2.467	[1.316]	-2.41	[1.298]
Bracken school readiness score, age 3			0.336***	[0.016]	0.330***	[0.016]	0.333***	[0.016]
# of natural sibs at birth			1.096*	[0.455]	1.055	[0.594]	1.086	[0.592]
# of half sibs at birth			-0.438	[0.827]	-0.527	[0.898]	-0.335	[0.893]
# of step sibs at birth			-0.407	[2.208]	-2.866	[3.158]	-2.811	[3.176]
Wave 1 poverty			-1.372**	[0.530]	-0.703	[0.541]	-0.577	[0.540]
Mother depressed at wave 1			-0.769	[0.546]				
No workers in HH at wave 1			-0.675	[0.930]				
1 worker in HH at wave 1			0.808	[0.445]				
# of full sibs gained by school entry					-0.44	[0.548]	-0.38	[0.540]
# of half sibs gained by school entry					-1.566*	[0.788]	-1.415	[0.776]
# of step sibs gained by school entry					-3.729	[2.320]	-3.519	[2.329]
Poverty at wave 3					-1.236**	[0.461]	-1.160*	[0.463]
Mother depressed at wave 1 only					-1.764*	[0.740]	-1.654*	[0.735]
Mother depressed at school entry only					-2.626**	[0.850]	-2.518**	[0.848]
Mother depressed at both waves					0.084	[0.869]	0.289	[0.869]
Household gained workers by school					-0.744	[0.919]	-0.568	[0.917]
Household lost workers by school					-1.183	[0.984]	-1.125	[0.985]
Household never had workers					-1.539	[1.172]	-1.331	[1.170]
Family involvement					0.172	[0.258]	0.165	[0.258]
Household gained grandparents							0.964	[1.430]
Household lost grandparents							1.513	[1.177]
Household gained other adults							1.002	[1.232]
Household lost other adults							0.082	[1.566]
Total residential changes by school							-0.550*	[0.254]
Neighborhood quality								
Lower-quality neighborhood at school entry							-1.689	[1.157]
Better neighborhood at school entry							-1.505	[0.796]
Neighborhood poor at both waves							-1.203	[1.280]
Intercept	15.922***	[4.696]	5.409	[5.165]	8.941	[5.496]	8.463	[5.478]
N	10707		10707		10707		10707	

Fit statistics still need to be copied over to tables.

* p<0.05, **p<0.01, *** p<0.001

Table 7. Poisson regressions predicting children's conduct problems in reception class, MCS

	Baseline		Selection		Family Context		Ecology	
Family structure history (vs steady marbio)								
Steady bio parents cohabiting	0.105***	[0.016]	0.058***	[0.017]	0.051**	[0.017]	0.049**	[0.017]
Steady single mother	0.211***	[0.015]	0.083***	[0.020]	0.060**	[0.021]	0.059**	[0.021]
Early cohabitation to marriage	0.112***	[0.032]	0.059*	[0.029]	0.051	[0.029]	0.051	[0.029]
Later cohabitation to marriage	0.098***	[0.023]	0.068**	[0.023]	0.059**	[0.022]	0.058**	[0.022]
Married to single	0.133***	[0.026]	0.077**	[0.025]	0.047	[0.026]	0.04	[0.026]
Cohabiting to single	0.158***	[0.026]	0.091***	[0.027]	0.065*	[0.027]	0.056*	[0.027]
Single to bio cohabiting	0.172***	[0.044]	0.067	[0.041]	0.073	[0.041]	0.078	[0.041]
Child age at school entry interview	-0.073***	[0.018]	-0.073***	[0.017]	-0.069***	[0.018]	-0.072***	[0.017]
Child is male	-0.080***	[0.009]	-0.075***	[0.008]	-0.077***	[0.008]	-0.076***	[0.009]
Mother's race (compared to White)								
Mixed	-0.09	[0.049]	-0.098*	[0.048]	-0.086	[0.049]	-0.091	[0.049]
Indian	-0.006	[0.036]	-0.032	[0.033]	-0.05	[0.032]	-0.052	[0.031]
Pakistani	0.090**	[0.034]	-0.016	[0.034]	-0.062	[0.034]	-0.058	[0.036]
Bangladeshi	-0.028	[0.076]	-0.128	[0.072]	-0.182*	[0.073]	-0.173*	[0.073]
Black Caribbean	-0.023	[0.052]	-0.031	[0.043]	-0.080*	[0.037]	-0.082*	[0.037]
Black African	-0.110*	[0.047]	-0.116*	[0.047]	-0.150**	[0.046]	-0.156***	[0.047]
Other ethnic group	-0.105*	[0.050]	-0.089	[0.052]	-0.114*	[0.053]	-0.115*	[0.054]
mnativity	-0.013	[0.025]	-0.015	[0.025]	-0.025	[0.026]	-0.028	[0.026]
magebth			-0.004***	[0.001]	-0.004***	[0.001]	-0.003***	[0.001]
Mother's education (vs NVQ level 2)								
No qualifications			0.084***	[0.022]	0.065**	[0.021]	0.063**	[0.020]
NVQ level 1			0.023	[0.020]	0.019	[0.019]	0.018	[0.019]
NVQ level 3			-0.023	[0.015]	-0.023	[0.015]	-0.024	[0.015]
NVQ level 4			-0.027*	[0.013]	-0.019	[0.013]	-0.019	[0.013]
NVQ level 5			-0.001	[0.026]	0.006	[0.025]	0.005	[0.025]
Overseas qualifications only			0.034	[0.031]	0.015	[0.030]	0.012	[0.031]
Bracken school readiness score, age 3			-0.003***	[0.000]	-0.002***	[0.000]	-0.002***	[0.000]

# of natural sibs at birth			0.054***	[0.010]	0.058***	[0.014]	0.056***	[0.014]
# of half sibs at birth			0.050**	[0.019]	0.055**	[0.019]	0.048*	[0.020]
# of step sibs at birth			0.108*	[0.052]	0.157*	[0.064]	0.162*	[0.064]
Wave 1 poverty			0.041**	[0.015]	0.02	[0.015]	0.017	[0.015]
Mother depressed at wave 1			0.139***	[0.015]				
No workers in HH at wave 1			0.012	[0.021]				
1 worker in HH at wave 1			-0.008	[0.011]				
# of full sibs gained by school entry					0.022	[0.014]	0.022	[0.014]
# of half sibs gained by school entry					0.058**	[0.020]	0.055**	[0.020]
# of step sibs gained by school entry					0.094	[0.054]	0.095	[0.054]
Poverty at wave 3					0.025*	[0.013]	0.022	[0.013]
Mother depressed at wave 1 only					0.097***	[0.018]	0.094***	[0.017]
Mother depressed at school entry only					0.184***	[0.017]	0.181***	[0.017]
Mother depressed at both waves					0.255***	[0.023]	0.248***	[0.024]
Household gained workers by school					0.025	[0.020]	0.023	[0.019]
Household lost workers by school					0.013	[0.024]	0.012	[0.024]
Household never had workers					0.017	[0.021]	0.015	[0.021]
Family involvement					-0.022***	[0.006]	-0.022***	[0.006]
Household gained grandparents							0.072*	[0.033]
Household lost grandparents							-0.043	[0.029]
Household gained other adults							0.021	[0.034]
Household lost other adults							-0.009	[0.037]
Total residential changes by school							0.009	[0.005]
Neighborhood quality								
Lower-quality neighborhood at school entry							0.035	[0.027]
Better neighborhood at school entry							0.039*	[0.019]
Neighborhood poor at both waves							0.094*	[0.037]
Intercept	1.739***	[0.096]	1.691***	[0.115]	1.637***	[0.128]	1.641***	[0.128]
N	10382		10382		10382		10382	

Fit statistics still need to be copied over to tables.

* p<0.05, **p<0.01, *** p<0.001