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Family Structure, Family Stability, and Outcomes of Five-Year-Old Children

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Abstract

This study exploits data from the Fragile Families and Child Wellbeing Study, a birth cohort study of a diverse sample of children from twenty U.S. cities ($N = 3,676$), to examine how cognitive, behavioural, and health outcomes of five-year old children differ according to their family structure and family stability. We define three models: one that measures family structure at birth only, a second that measures current family structure at year five conditional on family structure at birth, and a third that measures changes in family structure from birth to age five. We find that while family structure has persistent links to child outcomes, the effects are significantly altered by stability of the family structure over time. These findings remain robust even after addressing selection.

Keywords

Cognitive Ability; Family Structure; Family Stability; Behavioural Problems; Child Health

INTRODUCTION

The American family is rapidly changing. No change is more striking than the increase in the share of children who are born to unmarried parents. Indeed, this type of family has become so common that it now has a distinct label – the *fragile family*. Children born into fragile families are of critical concern because research has found that they tend to have a higher risk of family instability, fewer parental resources, and poorer outcomes relative to children born to married parents (Kalil and Ryan, 2010; Waldfogel, Craigie, and Brooks-Gunn, 2010). Moreover, studies that have focused on the child's current family structure also found that children living with single parents or unmarried parents do not fare as well as children living with married biological parents (*e.g.* Acs, 2007; Manning and Brown, 2006; Brown, 2004; Carlson and Corcoran, 2001; McLanahan and Sandefur, 1994; Schmeer, 2011). These findings raise the question, as to which of these family processes are really at work: family structure at the time of birth, the current family structure in which the child

resides, or cumulative changes in family structure over time. Consequently, we exploit U.S. data from the Fragile Families and Child Wellbeing Study (FFCWS) to distinguish the effects of family structure (at-birth and current) from the effects of family instability on the wellbeing of five-year-old children.

Our study centres on family structure and stability effects on a wide array of child outcomes from the cognitive, behavioural, and health domains. Research has significantly linked early childhood experiences to human capital accumulation and later success. As such, our analysis of the family structure, stability, and outcomes of five-year-old children have important ramifications for their subsequent adolescent and adult outcomes (Cavanagh and Huston, 2008; Duncan, Brooks-Gunn and Klebanov, 1994; Ruhm, 2004).

THEORY AND BACKGROUND

A substantial body of research in the United States confirms that the structure of the family into which a child is born and raised affects child wellbeing. The seminal study by McLanahan and Sandefur (1994) showed that children born to two-parent families had the lowest risk of being a high school dropout, pregnant teen, and idle; these children even had better adult outcomes. However, not all two-parent families are created equal. The children of cohabiting families are shown to have worse outcomes relative to children of married parents (Brown, 2004; Manning and Brown, 2006; Manning and Lichter, 1996; Schmeer, 2011; Waldfogel, Craigie and Brooks-Gunn, 2010). Unmarried cohabiting parents have lower incomes, and less education than married parents (Carlson and Corcoran, 2001; Hanson, McLanahan and Thomson, 1997; McLanahan and Sandefur, 1994; Brown, 2004), and cohabiting mothers usually have higher levels of depression relative to married mothers (Brown, 2000, 2002, 2004; Demo and Acock, 1996; Friedlander, Weiss and Traylor, 1986; Waldfogel, Craigie, and Brooks-Gunn, 2010). Compared to cohabiting families, step-families have higher average economic resources, but this advantage is potentially offset by the adverse effects of instability (Cavanagh and Huston, 2006).

Like children in cohabiting families, children of single-parent households typically have worse outcomes relative to children of married or cohabiting unions (Biblarz and Gottainer, 2000; Magnuson and Berger, 2009; McLanahan, 1985; Carlson and Corcoran, 2001; Brown, 2004; Bzostek and Beck, 2008; Harknett, 2005). However, paternal absence not only leaves the custodial mother with less time to spend with children (due to the onus of household and parental responsibilities), but non-resident fathers also tend to spend less time with their children than do resident fathers (Carlson, McLanahan, and Brooks-Gunn, 2008; Tach, Mincy and Edin, 2010). Parenting in single-parent families may also be less effective because often the custodial parent must be both provider and supervisor. Non-resident fathers are usually less involved than resident fathers, and even if they are involved, they do not play as strong a role in the discipline and shaping of their children's lives (Hetherington, 1999; Kelly and Emery, 2003). In addition, children of single mothers are at a unique disadvantage since only approximately one-third of noncustodial fathers pay any child support (Carlson and Corcoran, 2001; Sorenson, 1997; Freeman and Waldfogel, 2001).

At-Birth versus Contemporaneous (current) Family Structure

The literature has clearly illustrated that resources differ significantly by family structure, with married biological parents typically having a premium on income, education, and other child investments (Manning and Brown, 2006; McLanahan and Sandefur, 1994). While studies have presented overwhelming evidence that being born to married parents is associated with improved child wellbeing, it is unclear whether living with married parents is linked to better child outcomes even if parents were not married at the outset (Heiland and Liu, 2006; Schmeer, 2011). This is an important distinction for two main reasons: (1)

Marriage at birth potentially provides children with an initial boost to their development regardless of their later family settings. (2) Children currently living with married parents are also likely to have been born to married parents. Consequently, the marriage premium may be from the initial boost at the time of birth rather than subsequent marriage. Understanding this process is imperative to informing the debate on the importance of marriage given that children born to unwed parents might not experience improved wellbeing if their biological parents marry.

Conversely, being born to cohabiting parents or single parents may yield relative disadvantages to children. However, is this disadvantage persistent or is the current family structure responsible? The past literature has not distinguished between at-birth and contemporaneous family structures partly because they are highly correlated (Osborne, Manning and Smock, 2007; Raley and Wildsmith, 2004). This study will examine at-birth and contemporaneous (current) family structures to determine their differential effects on the outcomes of five-year-old children.

The Importance of Family Stability

Recently, more studies have begun to examine family structure changes over the course of a child's life (Acs, 2007; Cavanagh and Huston, 2006, 2008; Fomby and Cherlin, 2007; Steele, Sigle-Rushton and Kravdal, 2008; Waldfogel, Craigie & Brooks-Gunn, 2010). These studies have specifically focused on the issue of family stability i.e. whether the parent(s) with whom a child lives changed over time. Marriage at birth has been linked to a lower risk of later instability relative to at-birth cohabitation and single parenthood (Amato, 1993; Carlson and Corcoran, 2001; Fomby and Cherlin, 2007; Osborne and McLanahan, 2007; Wu and Martinson, 1993). Subsequently, the marriage premium may be in part due to family stability rather than family structure per se.

Why would family stability affect child well-being? The main theory brought to bear is *social stress theory* (George, 1989, 1993; Holmes and Rahle, 1967; Osborne and McLanahan, 2007). Changes in family structure are typically accompanied by changes in economic, time, and parental resources; this subsequently leads to stress on families and adverse child outcomes. Family instability is also linked to residential instability (Amato, 2000; Cavanagh and Huston, 2006; Kelly and Emery, 2003; Osborne and McLanahan, 2007; Magnuson and Berger, 2009; Waldfogel, Craigie, and Brooks-Gunn, 2010), changes in social networks and socio-emotional adjustments (Cooper, McLanahan, Meadows, and Brooks-Gunn, 2009; Hogan and Kitagawa, 1985; Astone and McLanahan, 1994) all likely to affect parents' mental health and early child wellbeing (Cooper McLanahan, Meadows, and Brooks-Gunn, 2009; Meadows, McLanahan, and Brooks-Gunn, 2008; McLanahan and Sandefur, 1994).

Prior empirical studies illustrate that family instability is associated with lower child cognitive scores, increased behavioural problems, and poorer health (Carlson and Corcoran (2001); Cavanagh and Huston, 2006; Fomby and Cherlin, 2007; Osborne and McLanahan, 2007; Magnuson and Berger, 2009). This study will therefore explore the effect of family stability on early child wellbeing. However, unlike the previous studies, we will explore the wellbeing of five-year-old children from all three domains – cognitive ability, behavioural problems, and health.

Hypotheses

Based on the theory presented, our study will test the following hypotheses:

1. Marriage at the time of birth will yield the best child cognitive, behavioural, and health outcomes relative to all other family structure types.

2. Contemporaneous marriage (measured at year five) will maintain strong positive effects on year-five cognitive, behavioural, and health outcomes as the marriage-at-birth effect subsides.
3. Family instability will have detrimental effects on cognitive, behavioural, and health outcomes of five-year-olds.

Role of Selection

It is important to caution that the decision to marry, cohabit or remain single is related to unobserved parental attributes that also affect child wellbeing (Fomby and Cherlin, 2007; Waldfogel, Craigie, and Brooks-Gunn, 2010). Married parents, for instance, arguably may have a different set of innate skills, values, and preferences compared to unmarried parents; these innate skills, values, and preferences work concurrently to affect the cognitive, behavioural, and health of young children. As a result, the estimated effect of family structure and stability may well be driven by these unobserved characteristics and will be biased. To deal with this problem in a parsimonious way, the family structure and family stability multivariate regression models all account for a rich set of parental and family background characteristics that serve as proxy variables for these unobserved parental attributes.

DATA AND VARIABLES

The data used in our empirical analyses come from the Fragile Families and Child Wellbeing Study (FFCWS). It utilized stratified random sampling to construct a birth cohort sample of 4,897 children born in twenty large cities in the United States from 1998 to 2000. The parents of each child (known as “the focal child”) were interviewed in the hospital at the time of the focal child’s birth, and then at approximately one, three, and five years thereafter. Designed to capture the conditions and capabilities of unwed parents, the FFCWS is nationally representative of non-marital births in large U.S. cities with a population of 200,000 or more, and is very diverse in terms of race and ethnicity (Reichman, Teitler, Garfinkel and McLanahan, 2001). Although the FFCWS uses random sampling, the oversampling of nonmarital births from the twenty large U.S. cities may generate misleading results; however, this can be remedied by applying weights to the data, making them representative of births occurring in large cities (with a population of 200,000 or more) in the United Statesⁱ.

The FFCWS also provide detailed information on the relationship patterns, family structures, transitions, and characteristics of the focal child’s parents. The FFCWS has low attrition rates: over 4,677 mothers were interviewed at least once subsequent to the baseline (at-birth) interview, and 3,676 mothers participated in all interviews from baseline to year five. As our study examines changes in family structure throughout the child’s life course, only those mothers interviewed in all waves will be included in the analysis (N = 3,676).

Data on cognitive, behavioural, and health outcomes of children are provided from the mother’s five-year core interview as well as the Five-Year In-Home Longitudinal Study, designed to capture more detailed child outcomes. Of the 3,676 mothers interviewed in all waves, 2,747 also participated in the In-Home Longitudinal Study, accounting for approximately 75% of those eligible to participateⁱⁱ. Data on the focal child’s asthmatic episodes are provided by the five-year core interview but the sample size is slightly different

ⁱTable 1 presents weighted means and standard deviations that are nationally representative of families living in large U.S. cities.

ⁱⁱThere is no statistical difference between participants and non-participants of the Five-Year In-Home Longitudinal Study except for racial differences. Black mothers are more likely and Hispanic mothers are less likely to participate.

(n = 3,605) due to missing observations. The other cognitive, behavioural, and health outcome measures were retrieved from the Five-Year In-Home Longitudinal Study. Although 2,747 mothers were interviewed in the Five-Year In-Home Longitudinal Study, the sample size for each outcome is different due to missing observations (see the following sub-section for actual sample sizes)ⁱⁱⁱ.

Child Outcome Measures

To measure cognitive development, we examine the Peabody Picture Vocabulary Test-Revised (PPVT-R), and the Woodcock Johnson Letter-Word Identification Test – both administered during the In-Home Study. The PPVT-R is a test of receptive vocabulary, and serves as an indicator of academic readiness for pre-school aged children (Dunn and Dunn, 1997). The Woodcock Johnson Letter-Word Identification Test (WJT) measures word recognition and pronunciation abilities of children (Woodcock and Johnson, 1990). Children's scores on both tests were standardized in order to adjust for each child's performance in comparison to his/her peers of the same age (in months). Table 1 indicates that the unweighted mean standardized scores for the PPVT-R (n = 2180) and WJT (n = 2192) are 93.36 (S.D. = 15.83) and 99.93 (S.D. = 14.99) respectively.

Child behavioural problems, as reported by mothers, were measured using the Child Behaviour Checklist (CBCL), which includes sub-scales identifying aggressive behaviour and anxious/depressive symptoms (Achenbach, 1991). Each item was scored on a 3-point Likert scale: {0 = "not true", 1 = "somewhat true" and 2 = "very true"}; a response of "very true" indicates more severe behavioural problems. We create an aggressive behaviour index (n = 2492) by summing the 20 aggressive behaviour items from the CBCL ($\alpha = 0.84$); this index increases with the level of aggressive behaviour in children. Similarly, we create an anxiety/depression index (n = 2527) by summing the 14 anxiety/depression items from the CBCL ($\alpha = 0.68$); this index increases with the level of anxiety/depression. The average index (unweighted) score is 11.16 (S.D. = 6.51) for aggressive behaviours and 3.50 (S.D. = 3.07) for anxiety/depression (See Table 1).

Our two measures of health are obesity and asthma. Obesity (n = 2030) in children is defined as having a body mass index (BMI) at or above the 95th percentile for their age-group (as provided by the Five-Year In-Home activity assessment); in the unweighted sample, 17% of children were obese at age five. An asthmatic episode or asthma attack (n = 3605) in the past 12 months is the indicator for asthma in children; 8% of children in our unweighted sample had asthma at age five based on this definition.

Family Structure Measures

In this study, we distinguish the effects of family structure at birth from the effects of contemporaneous (year five) family structure. We define three family structure types at the time of the focal child's birth: biological parents are married to each other, biological parents are cohabiting with each other (but not married), and the child's biological mother is single (i.e. living without a partner)^{iv}. Table 1 presents both weighted and unweighted means of all family structure measures.^v The unweighted summary means in Table 1

ⁱⁱⁱMissing observations in the independent variables are imputed using the multiple imputations method.

^{iv}Although in principle, there might be a fourth category, in which a child's mother is coresiding with someone other than the child's biological father, this is rare at the time of birth. For the most part, if a mother is not married to or cohabiting with the child's biological father at birth, she is not married to or cohabiting with anyone else at that time.

^vThe sampling frame was based on 77 large U.S. cities with a population of at least 200,000 people i.e. metropolitan areas. Using stratified random sampling, the FFCWS randomly samples cities, then hospitals within each city and then births within each hospital. The final sampling weights of births accounted for probability of selection and non-response rates at all stages. The sampling weights were constructed such that births were representative of all births in large U.S. metropolitan areas (Carlson, 2008).

indicate that approximately 25% of mothers in our sample were married at the time of birth, 36% were cohabiting, and 39% were single. Weighted means indicate that about 60% of parents were married at the time of the focal child's birth.

Contemporaneous family structure is defined as the current family structure in which the focal child resides at age five. In contrast to family structure at birth, there are five current family structure types: biological parents are married to each other, biological parents are cohabiting with each other (but not married), the child's biological mother is single, the child's biological mother is cohabiting with a new partner, and the child's biological mother is married to a new partner. Table 1 indicates that in the unweighted sample, nearly 40% of mothers were single, and approximately 50% of mothers were either married or cohabiting with the biological father by year five; (over 60% of mothers were either married or cohabiting with the biological father by year five in the weighted sample).

To determine family stability, we observe whether the child has remained in the same family structure from birth through all subsequent interviews (up to age five). We then define a set of mutually exclusive binary variables to capture the dynamics of children's family structures, categorizing them as stable or unstable. A stable family is one in which the child has lived in the same family structure since birth. The stable family structure categories include: stable marriage, stable cohabitation, stable single-parent, and stable transition from cohabitation with the biological father to marriage with the biological father. (This latter category is defined as stable since the child is living with both biological parents from birth to age five with only a change in their marital status). Unstable family structures are those in which the family structure has changed since birth. Contemporaneous (year five) family structures where the biological parents are married, biological parents are cohabiting, the biological mother is single, the biological mother is cohabiting with a new partner, and the biological mother is married to a new partner, are all categorized as unstable if the child has experienced at least one family transition prior to year five. Family instability by year five is extremely common. As shown in Table 2, more than 50% of children in our unweighted sample were living in unstable families.

Independent Variables

We control for child and demographic characteristics that are likely to be correlated with both family structure (stability) and child outcomes. These variables, all measured at the time of the child's birth include: child gender, parents' age, mother's race/ethnicity, whether father is of a different racial-ethnic group, mother's education, and whether father has more, less or the same level of education as the child's mother. To mitigate selection bias in the family structure and family stability models, we also account for other parental and background attributes to serve as proxy variables for parents' innate skills, values, and preferences. The parental characteristics account for background characteristics (such as whether each parent lived in a two-parent family structure at age 15, had a father figure while growing up or had parents who received professional treatment for anxiety/depression), and individual traits (such as impulsivity (measured by Dickman's dysfunctional impulsivity (DDI) scale), and cognitive ability (measured by Wechsler's Adult Intelligence Scale (WAIS) scores)). We also control for city fixed effects in each model to capture the variation in city/state policies that influence both family formation and child wellbeing. (See Table 1 for summary means and standard deviations).

Empirical Strategy

To examine the relationship between family structure (stability) and our six measures of early child wellbeing, we employ three different models. Model 1 includes only the family structure at-birth measures, Model 2 includes contemporaneous (year-five) structure family

measures as well as controls for the at-birth family structure, and Model 3 includes family stability measures. We first present coefficients from bivariate regression models that control only for the relevant family structure or stability categories; bivariate regression models produce the mean of the outcome variable for each family structure/stability category and its associated standard error). In the multivariate analyses (unweighted), we add all the other independent variables to minimize selection bias. With the inclusion of these variables, we can observe the extent to which the associations with family structure (stability) in the raw data are driven by selection.

DESCRIPTIVE RESULTS

Table 2 shows the means of all child outcomes by family structure or stability category from our bivariate regression models. Panel 1, focusing on family structure at birth, indicates that there is a substantial marriage premium for all the outcomes encompassing cognitive, behavioural, and health domains. PPVT-R and WJT standardized scores are 5 to 8 points lower for children born to non-married parents relative to their counterparts born to married parents. Children of unmarried parents are also significantly more prone to anxiety/depressive symptoms, aggressive behaviours, obesity, and asthma by age five. Therefore, these findings suggest that family structure at birth is strongly linked to the outcomes of children, even up to five years old.

Similarly, when we analyze the association between contemporaneous family structure and child outcomes at year five, the means suggest that marriage between biological parents is associated with improved child wellbeing. Panel 2 illustrates that five-year-old children currently living with unmarried parents or a social father have adverse outcomes in general compared to five-year-old children living with married biological parents.

However, these models do not explicitly account for family stability. In Panel 3, accounting for family instability yields striking results. Relative to *stable* married families, unstable families and stable non-traditional families are both linked to lower cognitive scores and more behavioural problems. Family instability is also associated with worse health outcomes in children by age five.

Based on these descriptive family structure and family stability models, the outcome means suggest that in general, marriage between biological parents at any stage of the child's life provides a significant advantage to the wellbeing of five-year-old children. Nonetheless, these findings only describe the uncontrolled correlation between family type and child wellbeing – other child and family attributes may be driving this relationship.

MULTIVARIATE RESULTS

The Effect of Controlling for Selection on the Marriage Premium

Tables 3 and 4 present estimates from multivariate family structure and family stability regression models which account for child, demographic, and background characteristics as well as city fixed effects^{vi}. This extensive list of covariates attempt to minimize selection bias that potentially drives the difference in outcome means shown in Table 2. In general, the selection-corrected estimates indicate much smaller differences between married and non-traditional families. Compared to the outcome means presented in Table 2, the results from the at-birth family structure model in Table 3 (Panel A) illustrate that the at-birth marriage premium is still statistically significant for all cognitive, behavioural, and health

^{vi}Standardized regression coefficients (*italicized*) are presented in addition to unstandardized regression coefficients to ensure that effect sizes are comparable across measures.

outcomes, albeit smaller in magnitude. For instance, Table 3 indicates that the cognitive (WJT) score differential for children born to unmarried parents is nearly 3 points as opposed to the approximate 5-point differential shown in Table 2.

However, when we account for both selection and contemporaneous family structure at age five, the at-birth marriage premium dissipates for half the child outcomes. Panel B of Table 3 shows that being born to married parents is associated with less aggressive behaviour, anxious/depressive symptoms, and obesity in five-year-old children. However, for cognitive outcomes and asthma, current marriage matters but less so now that we have mitigated selection bias. These results suggest that contemporaneous family structure significantly affects child wellbeing but the effect of at-birth family structure persists for child behavioural problems and obesity.

The family stability model, now accounting for selection bias, also yields different findings. The small magnitudes of the coefficients in Table 4 suggest that the stable-marriage premium (relative to the descriptive means in Table 2) is not as substantial once selection biased is mitigated. However, stable marriage yields higher cognitive scores and lower anxious/depressive symptoms relative to all other stable and unstable family structure types. What also becomes clear is that relative to stable marriage, single-parenthood (regardless of stability) is associated with higher levels of child aggressive behaviours and obesity; living with a social father is associated with increased likelihood of asthmatic episodes.

By defining family structure and stability models separately, we were also able to uncover more nuanced findings. Table 3 indicates that conditional on the current family structure in which children reside, being born to unwed parents has potentially enduring effects on child anxious/depressive symptoms and obesity. The family stability model presented in Table 4 provides insight into the underlying mechanisms at work. The family stability model illustrates that children in stable non-traditional as well as unstable families have more anxious/depressive symptoms relative to children of stably married parents. This differential may then be attributed to a *resource effect* since non-marital families typically have fewer resources as well as an *instability effect* given that stress and mental health problems are largely linked to changes in family structure (Cavanagh and Huston, 2006; McLanahan and Sandefur, 1994).

In addition, children born to single mothers are more likely to be obese. In contrast to child anxiety/depression, the instability hypothesis in general does not hold, except for children of divorce. We can therefore deduce that children of single-mother families are more likely to be obese due to their likely disadvantage in economic and parental resources.

Another striking result is that having a new father in the household is associated with an increased probability of asthmatic episodes in five-year old children. Mother's re-partnerships are potentially linked to residential instability (Amato, 2000; Cavanagh and Huston, 2006; Kelly and Emery, 2003; Osborne and McLanahan, 2007; Magnuson and Berger, 2009; Waldfogel, Craigie, and Brooks-Gunn, 2010); this may explain the frequency in child asthmatic episodes in families where mothers have re-partnered.

The Effect of Control Variables on Early Child Outcomes

As expected, the control variables are significantly linked to early child wellbeing. For the cognitive outcomes, mother's college education, being white, and parents' WAIS scores are all linked to higher test scores for five-year old children. The characteristics of children associated with higher scores are: being a girl, and being the father's firstborn child. The length of time parents knew each other before the birth of the child is also associated with higher test scores.

Child behavioural outcomes are also influenced by several of the factors linked to child cognition. Mother's college education, being a girl, and the father's firstborn all are associated with lower aggressive behaviour in pre-school aged children. Moreover, parents' impulsivity, measured by the DDI, as well as the mental health problems of the child's maternal grandparents, are associated with more behavioural problems. Black children are less likely to have anxious/depressive symptoms whereas Hispanic children are more likely to have these symptoms relative to white children.

Race/ethnicity is also significantly linked to early child health. Hispanic children are more likely to be obese and asthmatic relative to their white counterparts. Moreover, male and firstborn children are more likely to have asthmatic episodes by age five.

DISCUSSION

Prior U.S. studies have largely found that marriage engenders significant advantage for children. However, this may be partially explained by the stability of marriage relative to other family structure types. In this paper, we have taken advantage of data on a large sample of a contemporary cohort of children in "fragile families" to distinguish between the effects of family structure and family stability on cognitive, behavioural, and health outcomes of five-year-old children. We also distinguished between at-birth and contemporaneous family structure effects in order to examine whether the family structure a child is born into continues to affect wellbeing and development *ex post*.

A simple comparison of outcome means suggests that family structure and stability are importantly linked to the wellbeing of young children. Living with married parents at age five is associated with a significant advantage in cognitive, behavioural, and health outcomes. However, at-birth marriage continues to yield a significant advantage for all outcomes even after accounting for the current family structure in which children reside. Furthermore, living with stably married parents is associated with the highest premium in cognitive scores and the lowest level of behavioural problems among five-year-old children.

With the inclusion of an extensive set of controls in the at-birth family structure model, the marriage premium remains statistically significant, thereby corroborating our first hypothesis. Nonetheless, accounting for selection bias in this way tempers the marriage premium considerably. Not only does the magnitude of the marriage premium decline, it is no longer statistically different from zero for some outcomes in the contemporaneous/at-birth family structure model (Model 2). Conditional on current family structure, the at-birth marriage premium persists for behavioural problems and obesity but dissipates for asthma and cognitive outcomes by age five. As such, the initial boost from marriage a child experiences at the time of birth tends to subside over time, reinforcing our second hypothesis. (However, contemporaneous marriage at year five does not maintain its positive effects on anxious/depressive symptoms and obesity, thereby contradicting our second hypothesis.)

Mitigating selection bias however, does not completely eliminate the stable marriage premium. Children of stably married parents appear to have at least some advantage in their cognitive, behavioural, and health development relative to children raised in other stable and unstable family structures. The findings indicate that stable marriage is associated with the highest cognitive scores and the fewest behavioural problems. Stable marriage yields lower obesity relative to single-parent families, and lower probability of asthmatic episodes relative to step-parent families. Thus, confirming our third hypothesis, it is marital *stability* that largely accounts for the observed marriage premiums given that instability from divorce, remarriage, and even marriage after the child's birth yield worse outcomes relative

to stable marriages. The adverse child outcomes associated with family instability may be explained by social stress, residential instability, and instability in social networks as the theory postulates.

There are some limitations to this study. First, our sample is drawn from twenty large U.S. cities, thereby restricting the generality of our findings to urban populations in the United States. Research on other populations within and outside of the United States would be recommended. Second, although we have accounted for an extensive list of covariates (including proxy variables for parental cognitive skills, values, and preferences) there may be variables omitted from our analysis that simultaneously influence family types and child outcomes. For this reason, we caution that the causality of our findings is predicated on the extent to which we have effectively addressed selection bias. Third, we have not examined potential mediators that help determine the differences between family types. According to theory, mediators such as mental health, father involvement, and parental resources are expected to mediate the effects of family structure (stability) on child outcomes (McLanahan and Sandefur, 1994). Future work would therefore do well to replicate our analyses with other samples as well as to explore mediating effects.

In spite of these limitations, our study sheds new light on the links between family structure, family stability, and early child developmental and health outcomes. Our findings that family stability and family structure play an important role for child wellbeing are not only relevant for the U.S., but also for other countries where there is an increasing share of children being raised in nonmarital and unstable families. Policies aimed at improving family and child wellbeing should not only promote marriage but also stability within family setting.

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Table 1

Summary Means and Standard Deviations

	Weighted		Unweighted		Min	Max
	Mean	S.D.	Mean	S.D.		
Outcomes (Year Five)						
Std. Peabody Picture Vocabulary Test-Revised (PPVT-R (Std.)) [n = 2180]	95.78	17.03	93.36	15.83	40	139
Std. Woodcock-Johnson Letter-Word Identification Test (WJT (Std.)) [n = 2192]	102.12	14.48	99.93	14.99	46	186
Aggressive Behaviour (Aggression) [n = 2492]	10.96	5.96	11.16	6.51	0	36
Anxiety/Depression Symptoms [n = 2527]	3.68	3.12	3.50	3.07	0	20
Obesity [n = 2030]	0.16	0.36	0.17	0.37	0	1
Asthma [n = 3605]	0.04	0.20	0.08	0.26	0	1
Family Structure (At-Birth)						
Parents Married	0.61	0.49	0.25	0.43	0	1
Parents Cohabiting	0.20	0.40	0.36	0.48	0	1
Mother is Single	0.19	0.40	0.39	0.49	0	1
Family Structure (Year Five)						
Parents Married	0.55	0.50	0.32	0.47	0	1
Parents Cohabiting	0.08	0.27	0.14	0.35	0	1
Mother is Single	0.25	0.44	0.38	0.49	0	1
Mother Married to New Partner	0.04	0.19	0.04	0.19	0	1
Mother Cohabiting with New Partner	0.09	0.27	0.12	0.32	0	1
Family Stability (Birth to Year Five)						
Stable Marriage	0.46	0.50	0.20	0.40	0	1
Cohabitation to Marriage	0.05	0.23	0.08	0.27	0	1
Stable Cohabitation	0.05	0.21	0.07	0.26	0	1
Stable Single	0.06	0.24	0.14	0.34	0	1
Cohabiting at Year Five (Unstable)	0.03	0.17	0.07	0.26	0	1
Married at Year Five (Unstable)	0.04	0.19	0.04	0.20	0	1
Single at Year Five (Unstable)	0.19	0.40	0.25	0.43	0	1
Mother Married to New Partner at Year Five (Unstable)	0.04	0.19	0.04	0.19	0	1
Mother Cohabiting with New Partner at Year Five (Unstable)	0.09	0.27	0.12	0.32	0	1
Other Covariates						

	Weighted		Unweighted		Min	Max
	Mean	S.D.	Mean	S.D.		
Male	0.55	0.50	0.52	0.50	0	1
Firstborn (Father)	0.34	0.47	0.22	0.41	0	1
Mother White	0.41	0.49	0.49	0.50	0	1
Mother Black	0.22	0.42	0.26	0.44	0	1
Mother Hispanic	0.29	0.45	0.03	0.18	0	1
Other	0.08	0.27	0.12	0.33	0	1
Father of Different Race	0.09	0.29	0.37	0.48	0	1
Mother HS Dropout	0.31	0.46	0.26	0.44	0	1
Mother had HS Diploma	0.26	0.44	0.25	0.43	0	1
Mother had Some College	0.19	0.40	0.11	0.32	0	1
Mother had College Degree	0.24	0.42	0.23	0.42	0	1
Mother has < Education	0.19	0.40	0.52	0.50	0	1
Mother has Same Education	0.56	0.50	0.25	0.43	0	1
Mother has > Education	0.25	0.43	30.28	6.04	0	1
Mother's Age	32.11	6.19	32.85	7.11	19	53
Father's Age	35.13	7.05	0.08	0.28	20	72
Mother had a Father Figure	0.08	0.26	0.10	0.30	0	1
Father had a Father Figure	0.07	0.25	0.43	0.50	0	1
Mother lived with both parents at 15	0.53	0.50	0.45	0.50	0	1
Father lived with both parents at 15	0.58	0.49	4.72	4.74	0	1
Years parents knew each other before pregnancy	6.93	5.83	2.97	0.61	0	31
Mother's DDI	3.01	0.61	3.00	0.71	1	4
Father's DDI	3.01	0.68	0.26	0.44	1	4
Mother's Parents had Mental Problems	0.26	0.44	0.20	0.40	0	1
Father's Parents had Mental Problems	0.19	0.40	6.79	2.64	0	1
Mother's WAIS Scores	7.12	2.82	6.50	2.74	0	15
Father's WAIS Scores	6.62	2.73	0.52	0.50	0	15

Data: FFCWS

The table presents weighted and unweighted means and standard deviations.
Unweighted N = 3,676

Table 2
Cognitive, Socio-emotional and Health Outcomes Means by Family Structure and Family Stability

Family Structure (At-Birth)	Model 1: At-Birth Family Structure				
	PPVT-R (Std.)	WJT (Std.)	Aggression	Anx/Dep	Obesity Asthma
<i>Married (Reference)</i>	99.87	103.84	9.18	2.82	0.13 0.06
Cohabiting	91.81***	98.33***	10.75***	3.56***	0.18** 0.09**
Single	91.35***	98.36***	11.70***	3.55***	0.18*** 0.09***
Model 2: Contemporaneous (Year Five) Family Structure					
Family Structure (Year Five)	PPVT-R (Std.)	WJT (Std.)	Aggression	Anx/Dep	Obesity Asthma
<i>Married (Reference)</i>	98.89	102.98	9.45	3.02	0.15 0.06
Cohabiting	90.49***	98.04***	10.67***	3.66**	0.17 0.07
Single	91.71***	98.33***	11.57***	3.44**	0.19* 0.09***
Married to new partner	93.99***	99.49**	10.76**	3.35	0.19 0.11**
Cohabiting with new partner	89.67***	97.59***	11.48***	3.72***	0.15 0.12
Model 3: Family Stability					
Family Stability (Birth to Year Five)	PPVT-R (Std.)	WJT (Std.)	Aggression	Anx/Dep	Obesity Asthma
<i>Married – Stable (Reference)</i>	102.24	105.56	8.90	2.74	0.12 0.05
Cohabiting to Married – Stable	94.22***	100.19***	10.40***	3.42**	0.14 0.06
Cohabiting – Stable	90.08***	97.04***	10.07**	3.82***	0.14 0.05
Single – Stable	91.64***	98.88***	11.60***	3.55***	0.20** 0.08*
Married – Unstable	94.04***	97.85***	10.41**	3.61***	0.26*** 0.08
Cohabiting – Unstable	90.94***	99.15***	11.29***	3.50***	0.19* 0.10
Single – Unstable	91.75***	98.02***	11.56***	3.39***	0.18** 0.09***
Married to New Partner – Unstable	93.99***	99.49***	10.76***	3.35*	0.19 0.11**
Cohabiting with New Partner – Unstable	89.67***	97.59***	11.48***	3.72***	0.15 0.12

Data: FFCWS

Note:

*** p<0.01,

**
*
p<0.05,

p<0.1 indicates statistical significant difference from the reference category.

Abbreviations:

PPVT-R (Std.) – Standardized Peabody Picture Vocabulary Test-Revised
WJC (Std.) – Standardized Woodcock-Johnson Letter-Word Identification Test
Aggression – Aggressive Behaviour; Anx/Dep – Anxiety/Depression Symptoms

Table 3

The Effect of Family Structure on Outcomes of Five-Year-Old Children

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	PPVT-R (Std.)	WJT (Std.)	Aggression	Anx/Dep	Obesity	Asthma
Panel A: At-Birth Family Structure Model						
Family Structure (At-Birth)						
Parents Cohabiting	-1.84* (1.00)	-2.75** (0.97)	0.63* (0.36)	0.46** (0.18)	0.04 (0.03)	0.02* (0.01)
Mother is Single	-0.42	-0.99*	0.24	0.19**	0.02	0.01*
	-0.82 (1.02)	-2.59** (1.01)	1.31*** (0.39)	0.53*** (0.18)	0.06** (0.03)	0.02 (0.01)
R ²	0.00	-1.01*	0.60***	0.23**	0.03**	0.01
	0.22	0.17	0.10	0.08	0.05	0.03
Panel B: Contemporaneous (Year Five) Family Structure Model (conditional on at-birth family)						
Family Structure (Year Five)						
Parents Cohabiting	-2.66** (1.15)	-1.86 (1.09)	0.02 (0.45)	0.11 (0.23)	-0.02 (0.03)	-0.00 (0.02)
Mother is Single	-0.73*	-0.53	-0.00	0.03	-0.01	0.00
	-2.44** (0.92)	-2.52** (0.92)	0.77* (0.36)	0.08 (0.18)	0.01 (0.03)	0.01 (0.01)
Mother Married New Partner	-1.08**	-1.20**	0.39**	0.03	0.01	0.00
	-3.21 (1.82)	-1.93 (1.71)	-0.00 (0.65)	0.09 (0.35)	0.01 (0.05)	0.04 (0.03)
Mother Cohabiting with New Partner	-0.60*	-0.38	0.01	0.02	0.00	0.01
	-4.10*** (1.21)	-2.54** (1.13)	0.28 (0.48)	0.26 (0.24)	-0.03 (0.03)	0.05** (0.02)
R ²	-1.08**	-0.68*	0.08	0.07	-0.01	0.01**
	-0.55 (1.10)	-1.71 (1.06)	0.46 (0.39)	0.40* (0.20)	0.05 (0.03)	0.02 (0.01)
Parents Cohabiting	0.10	-0.55	0.16	0.17*	0.02	0.01
Mother is Single	0.80 (1.15)	-1.21 (1.14)	1.00* (0.44)	0.46** (0.21)	0.06* (0.03)	0.01 (0.02)

VARIABLES	(1) PPVT-R (Std.)	(2) WJT (Std.)	(3) Aggression	(4) Anx/Dep	(5) Obesity	(6) Asthma
R ²	0.69	-0.39	0.45**	0.20*	0.03*	0.01
Observations	2180	2192	2492	2527	2030	3605

Heteroskedasticity-robust standard errors in parentheses

*** p<0.01,

** p<0.05,

* p<0.1

Notes: *Standardized Betas are italicized*

Reference Category: Parents Married

Estimates are from unweighted regressions that control for child gender, parental age, race and education; family background characteristics and city fixed effects.

Abbreviations:

PPVT-R (Std.) – Standardized Peabody Picture Vocabulary Test-Revised

WJC (Std.) – Standardized Woodcock-Johnson Letter-Word Identification Test

Aggression – Aggressive Behaviour

Anx/Dep – Anxiety/Depression Symptoms

Table 4

The Effect of Family Stability on Outcomes of Five-Year-Old Children

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	PPVT-R (Std.)	WJT (Std.)	Aggression	Anx/Dep	Obesity	Asthma
<i>Family Stability (Birth to Year Five)</i>						
Cohabitation to Marriage (Stable)	-4.01** (1.52)	-4.16*** (1.32)	0.84 (0.51)	0.44 (0.27)	0.01 (0.04)	0.01 (0.02)
Stable Cohabitation	-0.72* (1.43)	-0.82** (1.40)	0.17 (0.58)	0.09 (0.29)	0.00 (0.04)	0.00 (0.02)
Stable Single	-0.89** (1.22)	-1.08*** (1.24)	0.03 (0.50)	0.14** (0.23)	-0.00 (0.04)	-0.00 (0.02)
Parents Cohabiting at Year Five (Unstable)	-3.29** (1.51)	-4.68*** (1.47)	1.64*** (0.59)	0.64** (0.27)	0.07** (0.04)	0.01 (0.02)
Parents Married at Year Five (Unstable)	-0.86* (1.53)	-1.48*** (1.83)	0.55*** (0.69)	0.21** (0.34)	0.03* (0.05)	0.00 (0.02)
Mother is Single at Year Five (Unstable)	-0.53 (1.11)	-0.85** (1.15)	0.24 (0.42)	0.08 (0.20)	0.02 (0.03)	0.01 (0.02)
Mother married to New Partner at Year Five (Unstable)	-3.95*** (1.11)	-5.71*** (1.15)	1.49*** (0.42)	0.45** (0.20)	0.06* (0.03)	0.02 (0.02)
Mother married to New Partner at Year Five (Unstable)	-1.36** (1.86)	-2.33*** (1.78)	0.63*** (0.68)	0.18* (0.35)	0.03* (0.05)	0.01 (0.03)
Mother cohabiting with New Partner at Year Five (Unstable)	-0.71* (1.31)	-0.79** (1.27)	0.12 (0.51)	0.08 (0.24)	0.01 (0.03)	0.01 (0.02)
R ²	-5.41*** (1.31)	-5.40*** (1.27)	1.06** (0.51)	0.70** (0.24)	0.02 (0.03)	0.06*** (0.02)
Observations	-1.26*** (1.31)	-1.37*** (1.31)	0.27* (0.51)	0.19** (0.24)	0.01 (0.03)	0.02*** (0.02)
	2180	2192	2492	2527	2030	3605

Heteroskedasticity-robust standard errors in parentheses

*** p<0.01,
** p<0.05,
* p<0.1

Notes: *Standardized Betas are italicized*

Reference Category: Stable Marriage

Estimates are from unweighted regressions that control for child gender, parental age, race and education; family background characteristics and city fixed effects.

Abbreviations:

PPVT-R (Std.) – Standardized Peabody Picture Vocabulary Test-Revised
WIC (Std.) – Standardized Woodcock-Johnson Letter-Word Identification Test
Aggression – Aggressive Behaviour
Anx/Dep –Anxiety/Depression Symptoms