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FATHERS' MULTIPLE-PARTNER FERTILITY AND CHILDRENS' EDUCATIONAL OUTCOMES

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Fathers' Multiple-Partner Fertility and Children's Educational Outcomes

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Abstract:

We find substantial effects of fathers' multiple-partner fertility (MPF) on children's long-term educational outcomes. We focus on the children in nuclear families – households consisting of a man, a woman, their joint children, and no other children – which are in fathers' "second families." We analyze outcomes for 80,000 children born in Norway in 1986-1988 who grew up with both biological parents until age 18. This analysis cannot be done using existing US data sets. Children who spent their entire childhoods in nuclear families but whose fathers had children from another relationship living elsewhere were more likely to drop out of secondary school (24% vs 17%) and less likely to obtain a bachelor's degree (44% vs 51%) than children in nuclear families without MPF. Our probit estimates imply that the marginal effect of fathers' MPF is 4 percentage points for dropping out and 5 percentage points for obtaining a bachelor's degree. Our analysis suggests that the effects of fathers' MPF are primarily due to selection.

Key Words: Family structure, complex families, siblings, child welfare, educational outcomes

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1. Introduction

Children from nuclear families—households consisting of a man, a woman, their joint children, and no other children—have better educational outcomes than children from other family structures.[1] However, not all nuclear families are the same—in some nuclear families one of the parents, usually the father, has children from a "first family" living elsewhere. Using Norwegian register data, we investigate the association between fathers' multiple partner fertility (MPF) and the educational outcomes of the children in fathers' "second families" when the second families are "stable nuclear families"—that is, nuclear families in which the children spent their entire childhoods with both biological parents.

We then turn to blended families—households consisting of a man, a woman, at least one joint child, at least one "nonjoint" child from the mother's previous relationship, and no other children. In some of these blended families the father has children from a first family living elsewhere. We investigate the association between fathers' MPF and the educational outcomes of the joint children from his second family when his second family is a "stable blended family," that is, a blended family in which the joint children spent their entire childhoods.

Our study is the first to investigate the association between fathers' MPF and children's long-run educational outcomes. To avoid dealing with the association between changes in family structure and outcomes for children, we restrict our attention to children who spent their entire childhoods with both biological parents. We find that fathers' MPF has a substantial and statistically significant negative association with the educational outcomes of the children in the father's second family when the second family is a nuclear family. We emphasize the nuclear family results because

[1] The US Census defines a "traditional nuclear family" as a household consisting of a man, a woman, their joint children, and no one else; the Census definition further specifies that the parents are married. We depart from the Census definiton by not requiring marriage. In our analysis, we define a nuclear family as one in which there are no nonjoint children, but we include the small number of families in which other adults (e.g., grandparents) are present.

94.7% of the 79,466 children in our data who spent their entire childhoods with both biological parents grew up in nuclear families.

Although family complexity, sibling structure, and MPF are receiving increasing attention from sociologists, demographers, and economists, that attention has focused on mothers' rather than fathers' MPF. This reflects both the tradition of defining family structure as household structure and the paucity of US data on the family beyond the household. Because most US data sets are household based and because children usually remain with their mothers when unions dissolve, we know far more about the association between mothers' MPF and children's outcomes than about fathers' MPF. US data sets that document fathers' MPF usually provide little information about outcomes for children, and virtually none about long-term outcomes. Furthermore, US surveys do not have information on non-resident siblings. In a recent issue of *Annals of the American Academy of Political and Social Science* on "Family Complexity, Poverty, and Public Policy," Furstenberg (2014) concludes:

> The research on the consequences of more complex families for children is still inconclusive. There are many theoretical reasons why children may fare less well when their parents have obligations to children from other partners. We know that parents who have children with more than one partner are also different in many sociodemographic and psychological ways from those whose parenting is confined to a single union. Without effectively ruling out selection, it is very difficult to conclude that complexity per se undermines good parenting, couple collaboration, and successful child development. For the time being, it makes good sense not to rush to a judgment on the questions of whether or how family complexity compromises child well-being.

We agree with Furstenberg that we should avoid rushing to judgment about the causal effect of family complexity and the role of selection. That said, our analysis sheds some light on these difficult questions.

To describe the association between fathers' MPF and the long-run educational outcomes of the children in fathers' second families requires a large data set that links parents to all of their children, both resident and nonresident. We also require a relatively long longitudinal data set that follows children into adulthood in order to analyze long-term educational outcomes. No US data set satisfies these requirements. We use Norwegian register data, starting with 147,000 children born in Norway 1986-1988; we focus on the almost 80,000 of these children who grew up with both biological parents. Even starting with such a large data set, when we investigate educational outcomes for joint children in stable blended families we have 3,036 children and, of those, only 505 had fathers with children from another relationship living elsewhere.

We analyze separately the children from nuclear families and the joint children from stable blended families. This restriction allows us to reduce the variation in unobserved family characteristics and isolate the association between fathers' MPF and children's educational outcomes in simple, transparent family environments. All of the children we consider grew up with both biological parents, the family environment often identified in the literature as associated with the best outcomes for children. We find, as others have, that the educational outcomes of the children from nuclear families are substantially better than those of the joint children from stable blended families.

Our primary goal is to describe the association between fathers' MPF and children's long-run educational outcomes. In section 2 we discuss the literatures on family structure and on fathers' MPF, and in section 3 we discuss our family structure definitions. In section 4 we investigate the association between fathers' MPF and children's educational outcomes in nuclear families and in stable blended families, using the phrase "descriptive regressions" to characterize the patterns in the data. We estimate separate descriptive regressions for nuclear families and for stable blended

families. In nuclear families we find that fathers' MPF is negatively associated with children's long-term educational outcomes. For example, in nuclear families in which fathers had children from another relationship living elsewhere, we find that children were 4 percentage points (ppt) less likely to complete secondary school and 5 ppt less likely to complete college than children from nuclear families whose fathers did not have children from another relationship living elsewhere. In section 5 we discuss causal mechanisms, arguing that the effects of fathers' MPF are primarily due to selection rather than to resources. In section 6 we conclude that the family beyond the household exerts a substantial influence on children's educational outcomes and warrants further research.

2. The Family Structure and Family Complexity Literatures

Our work draws on the extensive literature on family structure and the burgeoning literature on family complexity. We first trace the evolution of the relevant literature on family structure as it relates to educational outcomes for children. We then turn to the literature on fathers' MPF. Finally, we discuss possible mechanisms linking fathers' MPF and children's educational outcomes.

2.1 Nuclear Families, Blended Families, and Children's Educational Outcomes

The popular literature on outcomes for children emphasizes either the distinction between single-parent families and two-parent families or between married and unmarried mothers but seldom digs deeper. The scholarly literature in demography and sociology has successively refined family structure categories. McLanahan and Sandefur (1994) made an important early refinement. Using four US data sets, McLanahan and Sandefur found that children who grew up

with both biological parents had better outcomes than those who did not.[2] Based on this finding, McLanahan and Sandefur mistakenly concluded that the crucial distinction was between children who grew up with both biological parents and those who did not. They based this conclusion on their finding that, on average, children who grew up with both biological parents (i.e., the children from nuclear families and the joint children in stable blended families) experienced substantially better educational and other outcomes than children from single parent families and the nonjoint children (i.e., stepchildren) in blended families. The move beyond the single-parent/two-parent dichotomy was an important step forward, but the conclusion that the crucial dimension of family structure was growing up with both biological parents was a misstep. The misstep resulted from pooling the large number of children from nuclear families with the small number of joint children from stable blended families.

Contrary to McLanahan and Sandefur's conclusion, the joint children in stable blended families—children who spent their entire childhoods with both biological parents—experienced substantially worse outcomes than the children from nuclear families. Using US data, Ginther and Pollak (2004), Gennetian (2005), and Halpern-Meekin and Tach (2008) show that the educational outcomes of the joint children from stable blended families were substantially worse than those of children from nuclear families even though the joint children in stable blended families spent their entire childhoods with both biological parents.[3] To avoid analyzing the effects of family instability on outcomes for children, we restrict our attention to children who

[2] McLanahan and Sandefur used the Panel Study of Income Dynamics (PSID), the National Longitudinal Survey of Young Men and Women (NLSY), the High School and Beyond Study (HSB), and the National Survey of Families and Households (NSFH).

[3] Ginther and Pollak, Gennetian, and Halpern-Meekin and Tach found virtually no difference between the educational outcomes of the joint children and the nonjoint children in blended families. In contrast, Case, Lin, and McLanahan (2000) and Evenhouse and Reilly (2004) used sibling difference models and found that stepchildren had worse outcomes.

never experienced family instability – that is, to children from nuclear families and the joint children from stable blended families.

Beyond the empirical difference between McLanahan and Sandefur, on the one hand, and Ginther and Pollak, Gennetian, and Halpern-Meekin and Tach on the other, is an important conceptual difference. McLanahan and Sandefur focus exclusively on the relationship between each child and his or her parents, while Ginther and Pollak, Gennetian, Halpern-Meekin and Tach, and Tillman (2008) also consider sibling structure (i.e., the relationship of each child to the other children in the household).[4] That is, unlike the family structure literature, the family complexity literature considers household sibling structure, including the presence of half-siblings and step-siblings that results from repartnering and MPF.

2.2 Multiple Partner Fertility and Child Outcomes

Recent research has estimated the prevalence of MPF in the United States.[5] Estimates from the Survey of Income and Program Participation (SIPP) find that 16.6% of mothers aged 15 and older and 14.6% of fathers aged 15 and older have MPF (Monte 2017). Using the National Longitudinal Survey of Adolescent Health (Add Health) and the National Survey of Family Growth (NSFG), Guzzo (2014) finds that 13% of men and 19% of women in their forties have had children with more than one partner. Using the NSFG, Manlove et al. (2008) finds that socioeconomic disadvantage and nonmarital fertility are associated with male MPF. Using the NSFG, Guzzo and Furstenberg (2007) document the extent and correlates of MPF and find that MPF is associated with

[4] Or, equivalently, Ginther and Pollak and Gennetian consider not only each child's relationship to the parents but also the structure of the household (i.e., nuclear family versus blended family). Using Swedish and US data, Björklund, Ginther, and Sundström (2007) found that educational outcomes are more negatively associated with the number of half-siblings than with the number of full siblings. They also found that having lived with half-siblings was negatively associated with educational outcomes even after controlling for the total number of half and full siblings.

[5] For a collection of authoritative articles on MPF and other forms of family complexity, see *Annals of the American Academy of Political and Social Science* (2014) on "Family Complexity, Poverty, and Public Policy."

economic disadvantage. None of these studies investigate the association between MPF and outcomes for children.[6]

Several studies have documented the prevalence of fathers' MPF and studied the relationship between fathers' MPF and child support. Using administrative data from Wisconsin, Meyer, Cancian, and Cook (2005), Cancian and Meyer (2011), and Cancian, Meyer, and Cook (2011) find that MPF is very common and not fully incorporated into Wisconsin's child support policy. Cancian, Meyer, and Cook (2011) finds that 60% of firstborn children of unmarried mothers have half-siblings by the age of 10. They also find that fathers with children from multiple relationships pay more in child support, but pay less per child and are more likely to fall behind in their payments. Taken together, these studies underscore the importance of fathers' MPF in formulating child-support policy, but they tell us nothing about outcomes for children.

Other researchers have examined MPF in Norway and Sweden. Steele, Sigle-Rushton, and Kravdal (2009) finds that family disruption is negatively associated with children's educational outcomes in Norway, and Björklund, Ginther, and Sundström (2007) finds that the association between family complexity and children's outcomes is very similar in Sweden and the United States. Lappegård and Rønsen (2013) finds a U-shaped relationship between male MPF and socioeconomic status in Norway, while Manlove et al. (2008) finds that in the US men's MPF is

[6] US Fragile Families data provide information about the association between fathers' MPF and outcomes for young children in the father's first family. For example, Carlson and Furstenberg (2007) finds that MPF measured by the father having a child with another woman is negatively associated with the quality of the mother's relationship with the children in his first family. Bronte-Tinkew, et al. (2009) finds that for children under the age of 36 months, a father having a child with another woman is positively associated with externalizing behavior and negatively associated with the physical health of children in his first family. Tach, Mincy, and Edin (2010) finds that father involvement with the children in his first family drops when the father has a child with another woman. For our purposes, there are two critical limitation of the Fragile Families data. First, because the Fragile Families children are still relatively young, we cannot observe their long-run educational outcomes or any other adult outcomes. Second, it focuses on the children in the father's first family while we are concerned with the childen in his second family.

associated with disadvantage (Manlove et al. 2008).[7] In Norway both low- and high-income men are more likely to have children with multiple partners.

Manning, Brown, and Stykes (2014) suggests that attention to MPF has generated renewed interest in blended families, household sibling structure, and measures of family complexity. That paper and Brown, Manning, and Stykes (2015) use the SIPP to combine measures of family structure (defined as the relationship of parents to children within the household) and of household sibling structure into a measure of family complexity. Manning, Brown, and Stykes (2014) examines the incidence of family complexity in the US, and find that in 2009 40.8% of children experience either sibling complexity (5.2%), parent complexity (28.5%) or both (7.1%). Brown, Manning, and Stykes (2015) finds that sibling complexity (measured by household sibling composition) is associated with lower income and the receipt of public assistance. However, Manning, Brown and Stykes (2014 p. 54) acknowledges that their estimates of sibling complexity "…will not mirror those of parents because they exclude nonresident siblings or siblings who have formed their own, separate households…"

2.3 Mechanisms Linking Fathers' MPF and Children's Educational Outcomes

Economic models treat family structure as either a mechanism that facilitates investment in children or as a proxy for parental investments in children.[8] In economic models of investment in children, parents invest time and money in their children's human capital. Having financial responsibility for children in a first family creates resource competition and, hence, might reduce investments in the human capital of the children in the second family.

[7] Mothers' MPF is associated with economic disadvantage and low educational outcomes in the United States, Australia, Norway, and Sweden (Thomson et al. 2014).

[8] Biblarz and Raftery (1999) argues that living in a "two-biological-parent family" should matter because two parents can provide more resources than one.

Sociological and psychological explanations suggest that family structure could operate not only through resources but through other mechanisms as well. For example, children from nuclear families benefit from more parental support and control than children from single parent families (Cherlin and Furstenberg 1994; Hofferth and Anderson 2003). These children usually experience more consistent parenting and more supervision leading to better educational and socio-economic outcomes.

Finally, the association between fathers' MPF and outcomes for children may reflect selection—for example, unobserved parental characteristics may affect both family structure and child outcomes through mechanisms other than resource allocation. For example, fathers' MPF may be associated with less competent or less devoted parenting or with more marital conflict. Any of these may cause children to experience worse outcomes. In section 5 we discuss the roles of resources and selection as mechanisms behind the statistical association between fathers' MPF and children's educational outcomes.

3. Context, Family Types, and Covariates

3.1 The Norwegian Context—Schooling and Child Support

All children in Norway attend compulsory school which they usually complete the year they reach 16. After completing compulsory school, all children are entitled to attend secondary school. Secondary schooling in Norway involves more tracking than in the United States: students who attend secondary school must choose between a three-year academic track and a three or four-year vocational track. University or college attendance usually requires completing the academic track with grades high enough to qualify for admission.

Graduation from secondary school has become increasingly important for successful participation in further education and work, and reducing the number of early school leavers is a policy objective in Norway and in most other OECD countries (Lamb and Markussen 2011). In Norway, more than 95% of those graduating from compulsory education in 2002-2004 (children born in 1986-1988) enrolled in secondary education, but only about 70% had completed secondary education five years later (Falch, Nyhus, and Ström 2014).

Separated parents (both cohabiting and married) may pay child support to or receive child support from the other parent and may also receive transfers from the Norwegian social insurance system. Until 2003, child support payments depended on custody, ability to pay (income), and the total number of children.[9] Required child support payments were specified as a percentage of the noncustodial parent's income and paid to the custodial parent: 11% of the gross income for one child, 18% for two, 24% for three, and 28% for four or more children. For example, a father with one child from his first family and one child in his second family would pay his first wife 9% of his income in child support (18/2); a father with one child from his first family and two children in his second family would pay his first wife 8% of his income (24/3). Noncustodial parents are legally obligated to provide financial support until their children turn 18 or until they complete secondary school, usually at age 19. Until 2002 the noncustodial parent also had to cover travel costs related to visits of nonresident children. For the noncustodial parent, child support expenditures were deducted from taxable income, whereas for the custodial parent, child support was treated as taxable income.

Parents also receive a child benefit from the Norwegian social insurance system. For each child under 18, the child benefit has been fixed since 1993 at NoK 970 (about $110 US per

[9] The pre-2003 rules were established in 1989 but built on earlier legislation. Until 1989 contribution levels were set by local public authorities.

month) and is exempt from taxes. If parents are married or cohabiting, the child benefit is usually transferred to the mother. In case of divorce or separation, the custodial parent receives an extended child benefit, amounting to the child benefit for one child more than she or he lives with.[10]

3.2 Sample and Family Type Definitions

Our analysis is based on individual-level data from official Norwegian registers for the period 1986-2014. The registers, which cover the entire Norwegian population, are merged using unique person-specific identification codes. These registers provide information about demographic background characteristics (gender, birth year/month, link to biological parents and country of birth), socio-economic data (education, annual income, and earnings), annually updated information about household composition, and continuously updated employment and social insurance status. The link to parents enables us to identify both parents' MPF and, combining this information with data on household composition, we can identify the family structures in which each child lived from birth until adulthood.

By an "eligible child" we mean a child who spent his or her entire childhood with both biological parents either in a nuclear family or a stable blended family. To avoid repeating the cumbersome phrase "eligible child or children," as a shorthand we use "eligible child," recognizing that in some families there is more than one eligible child. We include all eligible children in our analysis rather than selecting a single "focal child" from each family.

Our starting point is the population of 146,923 children born in Norway from January 1, 1986 through December 31, 1988 with Norwegian-born parents registered as living in Norway. Of these, 79,466 (54%) lived with both biological parents at least until the age of 18.

[10] During our sample time frame, surveys of divorced parents show that mothers received daily physical custody of children in almost 90% of cases, Jensen and Clausen (2000).

For our empirical work, we define a *nuclear family* as a household in which the eligible child spent his or her entire childhood living with both biological parents and in which all the other children in the household are also joint children. We define a *stable blended family* as a household in which the eligible child spent his or her entire childhood living with both biological parents and, for some portion of his or her childhood, living with at least one half-sibling. From the standpoint of the eligible child, our nuclear families and blended families are "stable" in the sense that the eligible child spent his or her entire childhood with both biological parents. By restricting our attention to nuclear families and stable blended families, we ensure that the eligible child experienced no family structure transitions. For stable blended families, we further restrict our attention to those in which all nonjoint children in the household are the mother's children. Because children generally remain with their mothers when parents separate, this is the leading case. We use the following taxonomy of family types to analyze the effects of fathers' MPF:

- Simple Nuclear families (**NFo**): the eligible child grew up in a stable nuclear family. Neither the father nor the mother had children from another relationship.
- Complex Nuclear Family (**NF+**): the eligible child grew up in a stable nuclear family. The father, but not the mother, had at least one child from another relationship living elsewhere.
- Simple Blended Family (**BFo**): the eligible child grew up in a stable blended family. All nonjoint children in the household were the mother's children and neither the father nor the mother had children from another relationship living elsewhere.
- Complex Blended Family (**BF+**): the eligible child grew up in a stable blended family. All nonjoint children in the household were the mother's. The father but not the mother had at least on child from another relationship living elsewhere.

Table 1 shows the distribution of eligible children by family type. The vast majority (90.7%) of eligible children grew up in simple nuclear families (NFo = 72,052). Because the fathers' children from previous unions most often live with their biological mothers, most children whose fathers had children from previous relationships living elsewhere grew up in complex nuclear families (NF+=3,208). Most eligible children in blended families belong to simple blended families (BFo=2,531)—that is, their fathers did not have children from another relationship living elsewhere, but almost 17% grew up in complex blended families (BF+=505).[11] Among our 78,296 eligible children 10,930 (13.96%) have full siblings who were born in 1986-1988 and, hence, are also included in our analysis.

3.3 Outcome Variables and Explanatory Variables

We use four measures of educational outcomes. Our first two measures are based on the grades received at completion of compulsory school, usually the year they turn 16. The children in our data receive grades going from 1 (lowest) to 6 (highest) in 11 subjects. Our first measure, *Grades*, is a normalized variable calculated by converting grades to a distribution with mean 0 and variance 1. We also use the grades obtained in the three core subjects (Mathematics, Norwegian and English) to construct *Low Grades,* a dummy which is equal to one if the child received a grade below 4 in all three core subjects, indicating weak qualifications for attending secondary school. Our third measure, *Drop Out*, is an indicator variable for not completing

[11] The remaining 1,170 children are classified as living in other types of blended families, including families with nonresiding half-siblings on mother's side (300 children), families with residing half-siblings solely on father's side (664 children), and families with residing step-siblings (206 children). Although these children grew up with both biological parents, they do not fit into our four basic categories. We see no justification for pooling these cases with any of the cour cases we are considering and drop them from the sample.

secondary school by age 22. Our fourth measure, *Bachelor's*, is an indicator variable for whether the child completed a bachelor's degree or higher by age 26.

Table 2 and Figures 1 and 2 show the average of each of our four educational outcomes by family type. The ordering of outcomes by family type is the same for each outcome.[12] The children from simple nuclear families do best, followed by complex nuclear families, simple blended families, and complex blended families. (The confidence intervals for simple and complex blended families overlap.)

In our analyses we control for both family and child characteristics. For parents we include age, marital status and dummy variables for educational level. These variables are all measured when the eligible child was born. For the years when the child is 0 to 18 years old, we also calculate the percentage of time that: i) the child lives in an urban location; ii) the mother is out of the labor force; iii) the father is out of the labor force; iv) the mother receives a disability pension; and v) the father receives a disability pension. For mothers' and fathers' annual earnings and for total household net financial wealth, we averaged variables measured over the years when the child was 0 to 18 years old. For children we include information on gender, month and year of birth, birth order (from the perspective of the mother), number of full siblings, and an indicator of whether the child moved to a different municipality during schooling age 6-18.

Table 3 shows the descriptive statistics for the explanatory variables by the four family types. We see strong positive selection on these observable explanatory variables into simple nuclear families (NFo). As we move from simple nuclear families to complex blended families, the likelihood that parents were not married at the birth of the child increases. Mothers in nuclear

[12] Although we have 78,296 children registered as living with their parents until they are 18, we only have the complete set of grades at age 16 for 74,119. Missing data on outcome variables is mainly due to exemption from being graded (grades), and death or migration after the age of 18 (drop out, bachelors degree).

families are much more likely than those in blended families to have at least some university education; 30% of mothers in simple nuclear families and 26% of those in complex nuclear families have at least some university education. In blended families, only 16% have any university education. As the education figures suggest, income and wealth are higher in simple nuclear families than in other family types. Parents are less likely to be disabled in nuclear families than in blended families.

4. Descriptive Regressions

We begin by comparing educational outcomes of children from nuclear families with those of joint children from stable blended families, controlling for family economic resources and observable parental and child characteristics. Then we turn to fathers' MPF, first comparing the educational outcomes of children in simple nuclear families with those of children in complex nuclear families, and then comparing outcomes of children in simple blended families with those of children in complex blended families, again controlling for family economic resources and observable parental and child characteristics. All of the children in our MPF comparisons are from fathers' second families.

We consider four indicators of children's educational outcomes: normalized grades from compulsory school (*Grades)*; the probabilities of low grades (*Low Grades)*; not completing secondary school by age 22 *(Drop Out)*; and obtaining a bachelor's degree by age 26 *(Bachelor's)*. We always consider the educational outcomes of children who spent their entire childhoods with both biological parents. Every child from a nuclear family satisfies this requirement, but only joint children from stable blended families satisfy it.

We use OLS and probit regressions to examine the association between fathers' MPF and children's educational outcomes. For child *i* consider the following outcome equation:

$$HC_i = \beta FS_i + \gamma W_i + \delta X_i + u_i$$

where HC_i measures a child's educational outcome, FS_i measures family and sibling structure, W_i observable parental characteristics, X_i individual child characteristics, and u_i is the error term. When we compare blended with nuclear families, we include a dummy variable for the joint children in stable blended families. We then analyze separately nuclear and blended families, controlling for fathers' MPF.

Our first specification includes all nuclear and stable blended families and controls for family structure, gender, and birth year. Our second specification adds controls for county of residence and parents' education and age. Our third specification, which we call our "comprehensive specification," includes controls for county of residence, parental age, education, parity, labor force and disability status, household size, income, wealth, and mobility patterns.

Thus far we have referred to "children's educational outcomes" without distinguishing between boys and girls. There is now an extensive literature on the gender gap in education.[13] Boys are less likely to complete secondary school, less likely to go to college, and those who go to college are less likely to graduate. Our final specification interacts the child's gender with our measures of family structure and fathers' MPF in order to test for the effect of fathers' MPF on gender differences.

[13] See, for example, Autor and Wassermann (2013), Autor et al. (2016), Bailey and Dynarski (2011), Becker, Hubbard, and Murphy (2010), and DiPrete and Buchmann (2013). Falch, Nyhus, and Ström (2014) show that boys have worse educational outcomes than girls in Norway.

4.1 Comparing Nuclear Families and Blended Families

Table 4 shows estimates of our four educational outcomes with an indicator for stable blended families. We find that joint children from stable blended families have substantially worse educational outcomes than children from nuclear families. When we add more control variables to the model, the coefficients on blended families decrease in size, in some cases by more than 75%, indicating that selection on observables plays a substantial role in the association between blended families and educational outcomes. Despite the fact that children in stable blended families are reared by both biological parents until age 19, they have significantly lower grades and are 2 percentage points (ppt) more likely to have grades that are alarmingly low in core subjects controlling for other observables ($p<.001$). Compared with children from nuclear families, children from stable blended families are 3 ppt more likely to drop out of secondary school increasing the likelihood of dropping out to 20% for blended families, and 3.6 ppt less likely to obtain a bachelor's degree by age 26, reducing the probability of a bachelor's degree in blended families to 48%. Our point estimates confirm the results found in Falch, Nyhus, and Ström (2014) that boys have substantially and significantly worse educational outcomes than girls.

4.2 The Effect of Fathers' MPF and Nonresident Half-Siblings

We next investigate the effect of fathers' MPF on educational outcomes for the children in fathers' second families. Since the estimates reported in Table 4 establish that children from nuclear families have better educational outcomes than children from stable blended families, we estimate separate regressions for nuclear families and blended families.

We begin with nuclear families. Table 5 reports estimates of the effect of fathers' MPF on children's educational outcomes. As we progressively add control variables, the coefficients on family structure become smaller in magnitude, again reflecting selection on observables. In the discussion that follows, we rely primarily on our comprehensive specification (specification 3). Fathers' MPF has a significant detrimental effect on all measures of children's educational outcomes. Estimates from the comprehensive specification indicate that fathers' MPF is associated with 10% of a standard deviation of lower grades ($p<.001$), a 3.2 ppt increase in the probability of having low grades, a 3.9 ppt increase in the probability of dropping out of secondary school ($p<.001$), increasing the likelihood to over 21%, and a 5.2 ppt decrease in the probability of obtaining a bachelor's degree ($p<.001$), decreasing the likelihood to 46%. These coefficients are somewhat larger than the estimated effect of blended families compared with nuclear families presented in Table 3.

In our fourth specification we interact gender (male=1) with NF+ families. In each specification, the interaction term is not significantly different from zero implying that in nuclear families the gender disparities in children's educational outcomes are unaffected by fathers' MPF.

Our estimates for blended families are much less precise than our estimates for nuclear families, perhaps because the sample size is much smaller. Table 6 reports estimates of the association between fathers' MPF and children's educational outcomes analogous to those reported for nuclear families in table 5. The estimates imply that children from complex blended families (BF+) are 5 ppt ($p<.06$) less likely to obtain a bachelor's degree and are 6.7 ppt ($p<.02$) more likely to have very low grades compared with children from simple blended families. For the other two outcomes, average grades and the probability of dropping out, we cannot reject the

hypothesis that fathers' MPF has no effect. As with nuclear families, we find that gender disparities are unaffected by fathers' MPF. The point estimates for MPF in blended families in Table 6 are strikingly close to those for nuclear families in Table 5, and in results reported in the appendix we cannot reject the hypothesis that, for each of the four educational outcomes, the MPF blended family estimates and the nuclear family estimates are equal. Compared with our nuclear family estimates, our blended family estimates are less salient.[14]

5. Resources and Selection as Mechanisms of Disadvantage

Parents' education and resources (time and money) affect children's outcomes, although we know little about their relative importance or about interactions between them. We investigate whether *competition for resources* between children in fathers' first and second families explains why fathers' MPF is associated with worse educational outcomes for the children in fathers' second families. We use two strategies to investigate the resource hypothesis. The first uses the age difference between the children in the father's first and those in his second family as a proxy for the intensity of resource competition. When the age difference is small, the resource competition hypothesis predicts that resources will be stretched thin and, hence, that educational outcomes for the children in the father's second family will be worse than when the age difference is large. The second strategy uses the number of children in the father's first family as a proxy for the intensity of resource competition. When the number of children in the father's first family is large, the father's child support obligation is large, thus reducing the resources available to the children in his second family. Hence, when there are more children in

[14] If we pool nuclear families and blended families, assume that the coefficients on all variables except fathers' MPF are the same in blended families and nuclear families, and include only controls for NF+, BFo, and BF+, then we cannot reject the hypothesis that the coefficients on NF+, BFo and BF+ are equal. We report these estimates in the Appendix. If we allow blended family coefficients to differ from the corresponding nuclear family coefficients, then, as in Tables 5 and 6, we find that BF+ children have significantly worse outcomes than BFo children for low grades and obtaining a bachelor's degree.

his first family, the resource competition hypothesis predicts that educational outcomes for the children in his second family will be worse than when there are fewer children in his first family. We do not find significant resource effects on child educational outcomes using either of these strategies.[15] This conclusion holds for both time and money, but the conclusion for money is strengthened by child support laws.

As discussed earlier, Norwegian child support law requires noncustodial fathers to pay child support to their first families until the children reach the age of 18 or 19. We use the number of nonresident half-siblings and the age difference between the children in the father's first family and those in his second family to investigate the effect of the transfers required by Norwegian law. When there is only one nonresident half-sibling, the required transfer is lower than when there is more than one. When the age difference is small, more will be transferred to the children in the father's first family during the childhood of the children in his second family.

5.1 Age Differences between Children

The closer in age the children in the father's first family are to those in his second family, the less time and money will be available for the children in the second family. If resource competition causes worse outcomes for children in the father's second family, then more years with a nonresident half-sibling under the age of 20 should lead to worse outcomes. But if

[15] Some may argue that distance between the father's first and second family will affect child outcomes. Kalil, et al. (2011) found that proximity to a divorced father led to marginally worse educational outcomes for children from the father's first family. In our sample, we do not observe the travel time and travel costs spent on visiting the children in the first family making it difficult to identify how proximity to children in the first family will affect outcomes for children in the father's second family. From the fathers perspective, having a non-resident child living in a different economic region usually will imply that it is both more costly and perhaps more time-consuming to have regular contact. This may affect the resident child negatively. On the other hand, fathers living far away from the non-resident children may increase the amount of time spent with his resident children. We found that children in BF+ living in close proximity to their non-resident half-siblings (i.e., in the same economic region) experienced somewhat worse educational outcomes than those who lived further away.

selection causes worse educational outcomes of the children in fathers' second families, then these coefficients should be independent of the age difference between the children. To test the age-difference hypothesis, we included dummy variables for the number of years (0-5, 6-10, and 11+) an eligible child has a nonresident half-sibling who is less than 20 years old and multiply them by the number of nonresident half-siblings in those age categories. This provides a measure of the amount of child support paid during the childhood of the eligible child. In Table 7 we report the results for our comprehensive specification which includes a full set of controls. We tested whether the coefficients from 1-5 and 6-10 years and 6-10 and 11-plus years were significantly different from one another. Although the probabilities of low grades and dropping out of secondary school increase in size the longer a father has financial responsibility for nonresident half-siblings, these coefficients are not significantly different from one another for any outcome. Thus, the age-difference strategy provides no support for the resource competition hypothesis. In nuclear families, the association between having nonresident half-siblings who are younger than 20 years old for 11+ years is largest and statistically significant for all outcomes; however the statistical tests fail to reject the null hypothesis that the effect of having half-siblings that age for 0-5 years and 11+ years is the same.

For stable blended families in Table 8, we find no statistically significant effect of having nonresident siblings close in age. After controlling for all covariates in the comprehensive specification, we find no significant effects of having half-siblings closer in age for any outcome.

5.2 Number of Children

The more children in the father's first family, the less time and money will be available for the children in his second family. For this test of the resource hypothesis, we add controls for

one nonresident half-sibling or two or more nonresident half-siblings.[16] The average number of nonresident half-siblings in NF+ families is less than 2, with 70% of NF+ children having one nonresident half-sibling. For nuclear families we report the estimates from the simple and comprehensive specification in Table 8. The results show that for all educational outcomes, the coefficient on two or more nonresident half-siblings is slightly larger, but not significantly different than that for one nonresident half-sibling.

We found that having two or more nonresident half-siblings was not significantly different than having only one nonresident half-sibling in NF+ families: both reduced educational outcomes compared with NFo children by a similar amount.

The analysis for blended families is more complicated because blended families also *receive* child support from the mother's first partner. The average number of nonresident half-sibs in BF+ is less than 2, with 63.5% of BF+ children having one nonresident half-sibling. We add controls for having two or more resident half-siblings (indicating a larger transfer of resources from the first partner *into* the household, one nonresident (indicating some resource drain also *out* of the household), and two or more nonresident half-siblings (indicating an even larger drain of resources *out* of the household). The results are reported in Table 10. In our comprehensive specification, the coefficient on two or more resident half-siblings is positive for three of the five educational outcomes, but they are not statistically significant. The coefficients on two or more nonresident half-siblings are associated with significantly worse educational outcomes for grades and the probability of low grades, indicating that the added family complexity of nonresident half-siblings leads to poor performance in compulsory school.

[16] Assuming there is one joint child in the home, if the father has one child outside the home he pays 9% of his income in child support for the noncustodial child. If he has two children outside the home (3 children total), he pays 16% of his income in child support for the noncustodial children.

5.3 Father's Income

In Table 11, we investigate whether fathers' income quartile has a significant impact on children's educational outcomes. We include controls for income quartile and then interact it with fathers' MPF for our nuclear family sample. The point estimates on fathers' MPF in Table 11 do not differ substantially from those observed in Table 5. In the first model, we do see an income gradient with all educational outcomes: the higher the income, the better the educational outcome of the child. However, these income effects fall considerably in the complete specification. Furthermore, none of the coefficients on income interacted with fathers' MPF are statistically significant.

Taken together, these results suggest that resources (or lack thereof) cannot explain the MPF results that we observe. The MPF effects are not explained by resource competition from having half-siblings who are close in age. Nor are they explained by having larger numbers of half-siblings. Finally, fathers' income has no impact on the MPF point estimates. Family structure transitions cannot be the causal mechanism because none of the eligible children experienced a family structure transition. Instead, these findings are most consistent with selection: unobserved parental characteristics that affect both family structure and child outcomes through mechanisms other than resources.

We probed the selection explanation by calculating an Oaxaca-Blinder decomposition to determine the extent to which differences in observable characteristics explain the worse educational outcomes that we observe for NF+ families. If our results were explained by differences in observable characteristics, then this would argue against selection as the primary mechanism. But for each outcome, we find that differences in coefficients rather than differences in observable characteristics explain a substantially larger fraction of the worse educational

outcomes. These estimates show that 81% of differences in test scores, 91% of differences in low grades, 74% of differences in not completing secondary school, and 56% of differences in completing a bachelor's degree are due to differences in estimated coefficients. These results underscore our conclusion that unobserved parental characteristics that affect both family structure and child educational outcomes best explain the negative association between fathers' MPF and children's educational outcomes.

6. Discussion and Conclusion

Until very recently, the family structure and family complexity literatures have been about household structure and household complexity. Because children generally remain with their mothers when their parents separate, discussions have focused on mothers' MPF and generally ignored fathers' MPF. Indeed, US data tell us little about the family beyond the household. Recent research on family complexity has investigated sibling structure but, at least in part because of data limitations, we know virtually nothing about the effects of MPF on children in fathers' second families. and we have avoided the limitations of US data by using Norwegian register data to investigate these relationships. We restrict our attention to children who spent their entire childhoods with both biological parents -- that is, to children who grew up in nuclear families and the joint children in stable blended families.

Although we analyzed separately children from nuclear families and the joint children from stable blended families, we emphasized nuclear families because almost 95% of the children who spent their entire childhoods with both biological parents grew up in nuclear families. For nuclear families, we found that fathers' MPF is associated with substantially worse educational outcomes. For blended families, we found that fathers' MPF is associated with worse

educational outcomes, but the estimated effects of fathers' MPF were inconclusive for two of the four educational outcomes.

Finally, we investigated the more difficult question of the causal mechanisms behind our descriptive findings: when the father's second family is a nuclear family, why do the children have worse educational outcomes than children from nuclear families in which the fathers do not have children elsewhere? Using the age difference between the children in the father's first and second families and using the number of children in his first family we found no support for the resource competition hypothesis. Because we do not find significant support for the resource competition hypothesis, we conclude that the deleterious effects fathers' MPF on children's educational outcomes is most likely due to selection.

More generally, our results show that the family beyond the household affects outcomes for children and that fathers' multiple-partner fertility warrants far more attention than it has thus far received.

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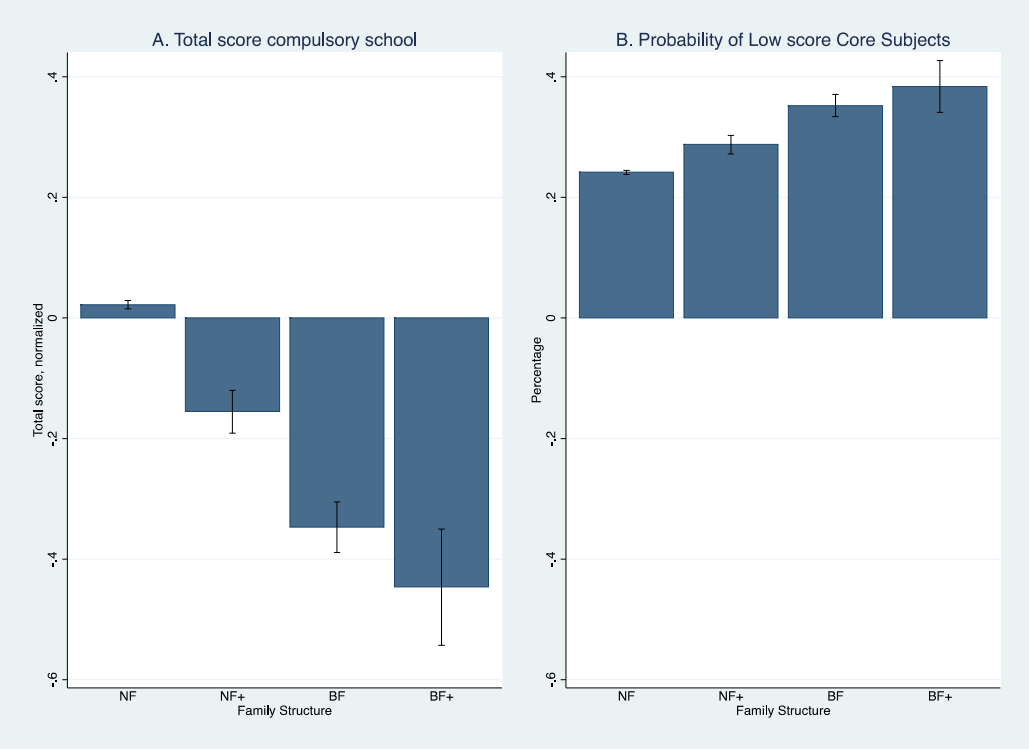

Figure 1: A) Normalized total exam scores by family structure. B) Probability of low exam scores by family structure.

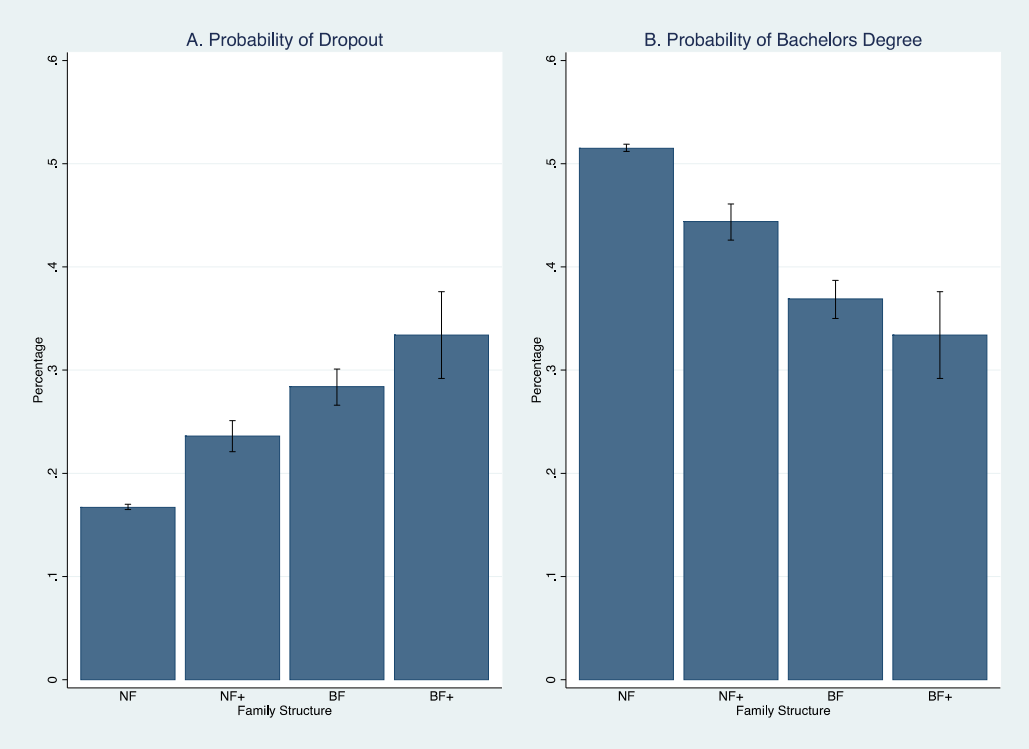

Figure 2: A) Probability of dropping out of secondary school by family structure. B) Probability of obtaining a bachelor's degree by family structure.

Table 1: Family Type: Children, Full Siblings and Half-Siblings

# Children born in 1986-1988 by Norwegian born parents	146,923
# Children living with both biological parents until age 18	79,466
# Children in Simple Nuclear Families (NFo)	72,052
% no full siblings	2.7
% one full sibling	38.8
% two or more full siblings	58.5
# Children in Complex Nuclear Families (NF+)	3,208
% no full siblings	10.6
% one full sibling	46.6
% two or more full siblings	42.8
% one nonresident half-siblings	70.0
% two or more nonresident half-siblings	30.0
# Children in Blended families (BFo)	2,531
% no full siblings	30.9
% one full sibling	48.0
% two or more full siblings	21.1
% one resident half-sibling	75.5
% two or more resident half-siblings	24.5
# Children in Complex Blended families (BF+)	505
% no full siblings	55.2
% one full sibling	34.5
% two or more full siblings	10.3
% one resident half-sibling	52.4
% two or more resident half-siblings	47.6
% one nonresident half-sibling	63.5
% two or more nonresident half-siblings	36.5
# Children in other family types	1,170

Note: Complex defined as having at least one nonresident half-sibling.

Table 2: Educational Outcomes by Family Type

Family type:	Outcome:	n	mean	std.dev
Simple Nuclear	**Grades**	70,992	0.222	0.992
NFo	**Low Grades**	72,052	0.252	
	Dropout	71,910	0.172	
	Bachelor's	71,930	0.513	
Complex Nuclear	**Grades**	3,147	-0.155	1.013
NF+	**Low Grades**	3,208	0.300	
	Dropout	3,201	0.240	
	Bachelor's	3,202	0.442	
Simple Blended	**Grades**	2,483	-0.347	0.074
BFo	**Low Grades**	2,531	0.364	
	Dropout	2,523	0.288	
	Bachelor's	2,523	0.365	
Complex Blended	**Grades**	497	-0.446	1.094
BF+	**Low Grades**	505	0.394	
	Dropout	504	0.339	
	Bachelor's	504	0.333	

Table 3: Descriptive Statistics for Covariates

	Simple Nuclear Family (NFo)		Complex Nuclear Family (NF+)		Simple Blended Family (BFo)		Complex Blended Family (BF+)	
Variable	Mean	Std.dev.	Mean	Std.dev.	Mean	Std.dev.	Mean	Std.dev.
Parents cohabit at birth	0.134		0.296		0.395		0.556	
# Full Siblings	1.814	1.060	1.480	0.962	0.965	0.902	0.575	0.742
Age father	30.899	4.881	35.387	6.085	32.026	5.399	37.284	6.733
Age mother	28.414	4.522	29.248	4.599	31.299	4.631	32.434	4.885
Fathers education:								
Primary school	0.178		0.255		0.237		0.262	
Some secondary	0.182		0.249		0.214		0.304	
Secondary school	0.329		0.270		0.322		0.234	
University/College	0.310		0.219		0.225		0.196	
Educ missing	0.002		0.006		0.002		0.004	
Mothers education:								
Primary school	0.264		0.296		0.420		0.388	
Some secondary	0.213		0.250		0.287		0.303	
Secondary school	0.215		0.190		0.131		0.137	
University/College	0.307		0.262		0.160		0.166	
Educ missing	0.001		0.003		0.003		0.006	
Earnings father	451.7	239.8	412.0	226.5	405.3	182.9	401.9	222.1
Earnings mother	210.1	119.9	226.5	127.6	185.9	113.1	197.9	125.1
Wealth Household	1307.5	4945.9	1258.6	7060.6	980.3	2378.9	1252.1	3394.2
Percent of Childhood:								
Urban Area	75.116	42.361	74.921	42.182	68.086	45.640	73.028	43.447
Father No Earnings	2.794	12.739	9.000	23.308	3.719	14.357	9.165	23.711
Mother No Earnings	8.101	21.764	9.851	23.998	11.899	25.885	13.376	27.267
Mother Disabled	2.624	12.768	8.061	22.186	4.153	16.388	9.041	23.405
Father Disabled	3.780	15.569	5.445	18.566	8.323	22.469	10.315	24.301
Receiving Social Assistance								
Household size	4.683	0.968	4.352	0.875	4.978	0.913	4.761	0.856
Family moved when child age 7-17	0.548		0.563		0.556		0.583	
Observations	72052		3208		2531		505	

Table 4: Marginal effects of Family Type on Educational Outcomes.
Nuclear vs. Blended Families

VARIABLES	Grades (1)	Grades (2)	Grades (3)	Low Grades (1)	Low Grades (2)	Low Grades (3)
Blended Family	-0.375***	-0.180***	-0.073***	0.117***	0.049***	0.019*
	[0.019]	[0.018]	[0.019]	[0.009]	[0.009]	[0.009]
Constant	0.314***	-1.685***	-2.166***			
	[0.014]	[0.111]	[0.125]			
Observations	77,119	77,118	77,118	78,296	78,295	78,295
R-squared	0.082	0.259	0.281			

VARIABLES	Dropout (1)	Dropout (2)	Dropout (3)	Bachelor's (1)	Bachelor's (2)	Bachelor's (3)
Blended Family	0.122***	0.069***	0.030***	-0.154***	-0.085***	-0.036**
	[0.008]	[0.008]	[0.008]	[0.009]	[0.010]	[0.011]
Observations	78,138	78,137	78,137	78,159	78,158	78,158

OLS Estimates of Grades; Probit estimates of Low Grades, Dropout and Bachelor's; coefficients are marginal effects. Robust Standard errors in brackets. *** p<0.001, ** p<0.01, * p<0.05

Table 5: Estimates of Effect of Fathers' MPF on Children's Educational Outcomes
Nuclear Families

VARIABLES	Grades (1)	Grades (2)	Grades (3)	Grades (4)	Low Grades (1)	Low Grades (2)	Low Grades (3)	Low Grades (4)
Nuclear Family+	-0.182***	-0.138***	-0.100***	-0.115***	0.051***	0.044***	0.032***	0.045***
	[0.018]	[0.017]	[0.017]	[0.023]	[0.008]	[0.009]	[0.009]	[0.013]
Nuclear Family+ * Male				0.031				-0.021
				[0.032]				[0.015]
Constant	0.323***	-1.739***	-2.225***	-2.224***				
	[0.014]	[0.114]	[0.127]	[0.127]				
Observations	74,139	74,139	74,139	74,139	75,260	75,260	75,260	75,260
R-squared	0.079	0.257	0.278	0.278				

VARIABLES	Dropout (1)	Dropout (2)	Dropout (3)	Dropout (4)	Bachelor's (1)	Bachelor's (2)	Bachelor's (3)	Bachelor's (4)
Nuclear Family+	0.069***	0.060***	0.039***	0.034**	-0.077***	-0.069***	-0.052***	-0.064***
	[0.008]	[0.008]	[0.007]	[0.011]	[0.009]	[0.010]	[0.010]	[0.014]
Nuclear Family+ * Male				0.008				0.024
				[0.013]				[0.020]
Observations	75,111	75,111	75,111	75,111	75,132	75,132	75,132	75,132

Robust Standard errors in brackets. OLS estimates of Grades; Probit Estimates of Low Grades, Dropout and Bachelor's. Probit coefficients are marginal effects. *** p<0.001, ** p<0.01, * p<0.05

Table 6: Estimates of Effect of Fathers' MPF on Children's Educational Outcomes
Blended Families

VARIABLES	Grades (1)	Grades (2)	Grades (3)	Grades (4)	Low Grades (1)	Low Grades (2)	Low Grades (3)	Low Grades (4)
Blended Family+	-0.087	-0.112*	-0.080	-0.097	0.028	0.072**	0.067*	0.073
	[0.052]	[0.050]	[0.050]	[0.066]	[0.024]	[0.028]	[0.029]	[0.041]
Blended Family+ *				0.033				-0.010
Male				[0.091]				[0.050]
Constant	-0.097	-1.846**	-1.875**	-1.867**				
	[0.083]	[0.660]	[0.717]	[0.717]				
Observations	2,980	2,979	2,979	2,979	3,036	3,035	3,035	3,035
R-squared	0.067	0.244	0.283	0.283				

VARIABLES	Dropout (1)	Dropout (2)	Dropout (3)	Dropout (4)	Bachelor's (1)	Bachelor's (2)	Bachelor's (3)	Bachelor's (4)
Blended Family+	0.051*	0.047	0.040	0.025	-0.031	-0.053*	-0.052~	-0.050
	[0.023]	[0.025]	[0.026]	[0.036]	[0.023]	[0.026]	[0.027]	[0.037]
Blended Family+ *				0.027				-0.005
Male				[0.047]				[0.051]
Observations	3,027	3,026	3,026	3,026	3,027	3,026	3,026	3,026

Robust Standard errors in brackets. OLS estimates of Grades; Probit Estimates of Low Grades, Dropout and Bachelor's. Probit coefficients are marginal effects. *** p<0.001, ** p<0.01, * p<0.05 ~p<.10.

Table 7: Estimates of Effect of Fathers' MPF on Educational Outcomes
Nuclear Families, Controlling for Number and Years of Overlap with Nonresident Half-Siblings

VARIABLES	Grades (1)	Grades (3)	Low Grades (1)	Low Grades (3)	Dropout (1)	Dropout (3)	Bachelor's (1)	Bachelor's (3)
0-5 Years Overlap	-0.144***	-0.085*	0.025	0.011	0.051**	0.026	-0.044*	-0.035
With Half Sibs	[0.041]	[0.040]	[0.019]	[0.019]	[0.017]	[0.017]	[0.021]	[0.024]
6-10 Years Overlap	-0.151***	-0.081**	0.036*	0.023	0.050***	0.028*	-0.053**	-0.036*
With Half Sibs	[0.031]	[0.028]	[0.015]	[0.015]	[0.014]	[0.013]	[0.016]	[0.018]
11+ Years Overlap	-0.214***	-0.115***	0.069***	0.043***	0.087***	0.050***	-0.102***	-0.067***
With Half Sibs	[0.025]	[0.023]	[0.012]	[0.012]	[0.011]	[0.010]	[0.012]	[0.014]
Constant	0.323***	-2.228***						
	[0.014]	[0.128]						
0-5 Years = 6-10 Years Overlap		NS		NS		NS		NS
6-10 Years = 11+ Years Overlap		NS		NS		NS		NS
Observations	74,139	74,139	75,260	75,260	75,111	75,111	75,132	75,132
R-squared	0.080	0.278						

Robust Standard errors in brackets. OLS estimates of Grades. NS: Difference in coefficients not statistically different from zero, p<0.05.
Probit Estimates of Low Grades, Dropout and Bachelor's. Probit coefficients are marginal effects.
Probit coefficients are marginal effects. Robust standard errors in brackets. *** p<0.001, ** p<0.01, * p<0.05

Table 8: Estimates of Effect of Fathers' MPF on Educational outcomes
Blended Families, Controlling for Number and Years of Overlap with Nonresident Half-Siblings

VARIABLES	Grades (1)	Grades (3)	Low Grades (1)	Low Grades (3)	Dropout (1)	Dropout (3)	Bachelor's (1)	Bachelor's (3)
0-5 Years Overlap	0.004	-0.069	-0.032	0.070	0.071	0.082	-0.003	-0.074
With Half Sibs	[0.102]	[0.100]	[0.044]	[0.061]	[0.054]	[0.056]	[0.045]	[0.052]
6-10 Years Overlap	-0.028	0.013	0.060	0.086	0.029	0.012	-0.033	-0.031
With Half Sibs	[0.097]	[0.087]	[0.046]	[0.049]	[0.044]	[0.044]	[0.045]	[0.047]
11+ Years Overlap	-0.156*	-0.124	0.042	0.059	0.049	0.040	-0.043	-0.055
With Half Sibs	[0.069]	[0.064]	[0.032]	[0.037]	[0.032]	[0.033]	[0.030]	[0.033]
Constant	-0.096	-1.815*						
	[0.083]	[0.722]						
0-5 Years = 6-10 Years Overlap		NS		NS		NS		NS
6-10 Years = 11+ Years Overlap		NS		NS		NS		NS
Observations	2,980	2,979	3,036	3,035	3,027	3,026	3,027	3,026
R-squared	0.068	0.284						

Robust Standard errors in brackets. OLS estimates of Grades. NS: Difference in coefficients not statistically different from zero, p<0.05.
Probit Estimates of Low Grades, Dropout and Bachelor's. Probit coefficients are marginal effects.
*** p<0.001, ** p<0.01, * p<0.05

Table 9: Estimates of Effect of Fathers' MPF on Educational Outcomes
Nuclear Families, Controlling for Number of Half-Siblings

VARIABLES	Grades (1)	Grades (3)	Low Grades (1)	Low Grades (3)	Dropout (1)	Dropout (3)	Bachelor's (1)	Bachelor's (3)
Nuclear Family	-0.183***	-0.094***	0.054***	0.031**	0.069***	0.039***	-0.077***	-0.046***
1 Half Sib	[0.021]	[0.019]	[0.010]	[0.010]	[0.009]	[0.009]	[0.011]	[0.012]
Nuclear Family	-0.179***	-0.115***	0.044**	0.032*	0.069***	0.041**	-0.075***	-0.068***
2+ Half Sibs	[0.033]	[0.031]	[0.015]	[0.016]	[0.014]	[0.014]	[0.016]	[0.018]
Constant	0.323***	-2.223***						
	[0.014]	[0.127]						
1 Half = 2+ Half Sibs		NS		NS		NS		NS
Observations	74,139	74,139	75,260	75,260	75,111	75,111	75,132	75,132
R-squared	0.079	0.278						

Probit Estimates of Low Grades, Dropout and Bachelor's. Probit coefficients are marginal effects.
OLS estimates of grades.
Robust Standard errors in brackets. *** p<0.001, ** p<0.01, * p<0.05
NS: Difference in estimated coefficients not statistically different.

Table 10: Estimates of Effect of Fathers' MPF on Educational Outcomes
Blended Families, Controlling for Number of Half-Siblings

VARIABLES	Grades (1)	Grades (3)	Low Grades (1)	Low Grades (3)	Dropout (1)	Dropout (3)	Bachelor's (1)	Bachelor's (3)
2+ Resident	-0.028	0.104	0.008	-0.034	0.040*	0.004	0.002	0.054
Half Sibs	[0.044]	[0.056]	[0.020]	[0.030]	[0.019]	[0.028]	[0.020]	[0.032]
1 Nonresident	-0.012	-0.027	0.030	0.058	0.024	0.026	-0.022	-0.046
Half Sib	[0.063]	[0.057]	[0.032]	[0.035]	[0.030]	[0.031]	[0.031]	[0.033]
2+ Nonresident	-0.162*	-0.172*	0.025	0.087*	0.070*	0.059	-0.041	-0.069
Half Sibs	[0.079]	[0.077]	[0.033]	[0.042]	[0.033]	[0.038]	[0.032]	[0.037]
Constant	-0.088	-1.975**						
	[0.083]	[0.722]						
1 NonR = 2+ Res		NS		3.87		NS		4.30
				(0.049)				(0.038)
2+NonR = 2+ Res		8.08		5.28		NS		5.53
		(0.005)		(0.0215)				(0.0187)
2+NonR=1 NonR		NS		NS		NS		NS
Sibs								
Observations	2,980	2,979	3,036	3,035	3,027	3,026	3,027	3,026
R-squared	0.068	0.285						

Robust Standard errors in brackets. OLS estimates of Grades. NS: Difference in estimated coefficients not statistically different from zero, p<0.05.
Probit Estimates of Low Grades, Dropout and Bachelor's. Probit coefficients are marginal effects.
*** p<0.001, ** p<0.01, * p<0.05

Table 11: Estimates of Effect of Fathers' MPF Interacted with Income Quartile, Nuclear Families

VARIABLES	Grades (1)	Grades (3)	Low Grades (1)	Low Grades (3)	Dropout (1)	Dropout (3)	Bachelor's (1)	Bachelor's (3)
Nuclear Family +	-0.123***	-0.085*	0.056**	0.047*	0.049**	0.039*	-0.060**	-0.056**
	[0.036]	[0.033]	[0.019]	[0.019]	[0.017]	[0.017]	[0.020]	[0.021]
Income Quartile 3	-0.211***	-0.002	0.078***	0.011*	0.044***	-0.007	-0.125***	-0.028***
	[0.010]	[0.009]	[0.005]	[0.005]	[0.005]	[0.004]	[0.005]	[0.006]
Income Quartile 2	-0.358***	-0.048***	0.124***	0.023***	0.085***	0.005	-0.196***	-0.054***
	[0.010]	[0.010]	[0.005]	[0.005]	[0.005]	[0.004]	[0.005]	[0.006]
Income Quartile 1	-0.513***	-0.103***	0.178***	0.044***	0.146***	0.029***	-0.278***	-0.097***
	[0.010]	[0.011]	[0.005]	[0.006]	[0.005]	[0.005]	[0.005]	[0.007]
Income Quartile 3	-0.031	-0.027	-0.012	-0.014	0.035	0.026	-0.006	0.001
*** Nuclear +**	[0.051]	[0.046]	[0.023]	[0.023]	[0.023]	[0.022]	[0.028]	[0.029]
Income Quartile 2	-0.071	-0.080	-0.022	-0.012	0.012	0.011	-0.004	-0.007
*** Nuclear +**	[0.050]	[0.046]	[0.022]	[0.022]	[0.020]	[0.020]	[0.027]	[0.029]
Income Quartile 1	-0.003	0.037	-0.020	-0.027	-0.003	-0.021	0.002	0.016
*** Nuclear +**	[0.047]	[0.043]	[0.021]	[0.020]	[0.018]	[0.016]	[0.026]	[0.027]
Constant	0.596***	-2.239***						
	[0.015]	[0.124]						
Observations	74,139	74,139	75,261	75,261	75,112	75,112	75,133	75,133

Robust Standard errors in brackets. OLS estimates of Grades. NS: Difference in estimated coefficients not statt Estimates of Low Grades, Dropout and Bachelor's. Probit coefficients are marginal effects.
*** p<0.001, ** p<0.01, * p<0.05

APPENDIX TABLE: Marginal effects of Fathers' Multiple Partner Fertility on Education
Nuclear and Blended Families

VARIABLES	Grades (1)	Grades (2)	Grades (3)	Low Grades (1)	Low Grades (2)	Low Grades (3)
Nuclear Family +	-0.180***	-0.139***	-0.100***	0.050***	0.045***	0.033***
	[0.017]	[0.016]	[0.016]	[0.008]	[0.009]	[0.009]
Blended Family	-0.367***	-0.172***	-0.075***	0.115***	0.047***	0.020*
	[0.020]	[0.018]	[0.019]	[0.010]	[0.009]	[0.009]
Blended Family +	-0.444***	-0.260***	-0.126**	0.138***	0.079***	0.038
	[0.043]	[0.039]	[0.039]	[0.022]	[0.021]	[0.020]
	0.321***	-1.838***	-2.299***			
Constant	[0.014]	[0.107]	[0.120]			
Observations	77,120	77,119	77,119	78,298	78,297	78,297
R-squared	0.083	0.258	0.280			

VARIABLES	Dropout (1)	Dropout (2)	Dropout (3)	Bachelor's (1)	Bachelor's (2)	Bachelor's (3)
Nuclear Family +	0.070***	0.062***	0.040***	-0.077***	-0.071***	-0.054***
	[0.008]	[0.008]	[0.007]	[0.009]	[0.010]	[0.010]
Blended Family	0.118***	0.066***	0.030***	-0.151***	-0.081***	-0.036**
	[0.009]	[0.008]	[0.008]	[0.010]	[0.011]	[0.012]
Blended Family +	0.171***	0.112***	0.064***	-0.175***	-0.113***	-0.061*
	[0.021]	[0.020]	[0.018]	[0.021]	[0.024]	[0.025]
Observations	78,139	78,138	78,138	78,160	78,159	78,159

OLS Estimates of Grades; Probit estimates of Low Grades, Dropout and Bachelor's; coefficients are marginal effects. Robust Standard errors in brackets. *** p<0.001, ** p<0.01, * p<0.05

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