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

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ABSTRACT Fathers' multiple-partner fertility (MPF) is associated with substantially worse educational outcomes for children. We focus on children in fathers' second families that are nuclear: households consisting of a man, a woman, their joint children, and no other children. We analyze outcomes for almost 75,000 Norwegian children, all of whom lived in nuclear families until at least age 18. Children with MPF fathers are more likely than other children from nuclear families to drop out of secondary school (24% vs. 17%) and less likely to obtain a bachelor's degree (44% vs. 51%). These gaps remain substantial—at 4 and 5 percentage points, respectively—after we control for child and parental characteristics, such as income, wealth, education, and age. Resource competition with the children in the father's first family does not explain the differences in educational outcomes. We find that the association between a father's previous childless marriage and his children's educational outcomes is similar to that between a father's MPF and his children's educational outcomes. Birth order does not explain these results. This similarity suggests that selection is the primary explanation for the association between fathers' MPF and children's educational outcomes.

KEYWORDS Family structure • Nuclear families • Complex families • Siblings • Educational outcomes

Introduction

Children who spend their entire childhood in a nuclear family—a household 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 alike. In some nuclear families, one parent has children from a previous relationship living elsewhere; this parent is usually the father.

We investigate the association between fathers' multiple-partner fertility (MPF) and the educational outcomes of the children in fathers' second families. To isolate the effect of MPF in the absence of family structure transitions, we restrict our attention

[1] A "joint child" is one who is the biological child of both the man and the woman. Although the U.S. Census Bureau definition of "traditional nuclear family" requires marriage, we do not.

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to second families that are nuclear families. All the children we consider spent their entire childhood, at least until age 18, in a nuclear family, the family structure that is associated with the best educational outcomes for children. We find that fathers' MPF is associated with substantially worse educational outcomes for the children in the fathers' second families.

Although MPF has received increasing attention from sociologists, demographers, and economists, the focus has been on mothers' rather than fathers' MPF. This focus reflects both the tradition of defining family structure as household structure and the paucity of U.S. data on the family beyond the household. Outcomes for children in blended families—households consisting of a man, a woman, their joint children, and at least one nonjoint child—have been extensively studied (Gennetian 2005; Ginther and Pollak 2004; Halpern-Meekin and Tach 2008). Given that children usually remain with their mothers when unions dissolve, blended families typically include the mother's children from previous relationships but not the father's. Because most U.S. data sets are household based, they seldom report whether the father has children from other relationships unless those children live in the household under study.

We investigate short-term and long-term educational outcomes associated with fathers' MPF. Previous studies have examined the association between family structure and children's educational outcomes (e.g., Björklund et al. 2007; Gennetian 2005; Ginther and Pollak 2004; McLanahan and Sandefur 1994; Steele et al. 2009). A meta-analysis found that fathers' involvement significantly improves children's educational outcomes (Jeynes 2015). To our knowledge, ours is the first study to examine the association between fathers' MPF and children's educational outcomes. Investigating this potential association requires data that link parents to all of their resident and nonresident children, as well as data that follow children far enough into adulthood to investigate both high school and college graduation. No U.S. data set follows children into early adulthood in sufficient numbers to support this kind of analysis. For example, the Panel Study of Income Dynamics (PSID) does not include enough MPF fathers to provide the data needed to investigate the association between fathers' MPF and high school or college graduation of children in fathers' second families.[2]

We use Norwegian register data with information about all children born in Norway in 1986, 1987, and 1988 from birth until age 26. The large sample size provided by population registers allows us to explore several potential explanations for the association between fathers' MPF and children's educational outcomes.

Several researchers have used Norwegian register data to gain a better understanding of the association between birth order and various outcomes (Black et al. 2005, 2011, 2016; Black et al. 2018; Lillehagen and Isungset 2020), the impact of the proximity of divorced fathers to their children (Kalil et al. 2011), and the effect of family disruptions on child outcomes (Steele et al. 2009). By restricting our analysis to children who spent their entire childhoods in a nuclear family, we isolate the association between fathers' MPF and children's educational outcomes in a simple, transparent family environment without making untestable *a priori* assumptions. This restriction to nuclear families, together with the very large sample size found in the

[2] In the PSID, we identified 1,402 children in fathers' second families in which the father had been married for 20 or more years. To investigate college graduation, we would need to observe these children to their mid-20s; only 133 children were observed to this age. To investigate high school graduation, we could relax the age restriction to age 21, but this would add only 31 children.

Norwegian registers, allows us to estimate the impact of MPF net of other types of family complexity. For example, it allows us to rule out family structure transitions as the cause of worse educational outcomes for children in fathers' second families.

We call nuclear families in which fathers have children from another relationship "complex nuclear families" and families in which fathers do not have such children "simple nuclear families." We find that children from complex nuclear families experience substantially worse educational outcomes. Our data allow us to investigate two mechanisms that may explain these worse outcomes: the resource competition hypothesis, which postulates that the children in fathers' first families compete with the children in their second families for resources; and the later birth hypothesis, which views birth order from the father's perspective. We find very little support for these explanations.

Although Furstenberg (2014) argued against rushing to judgment about the causal effect of family complexity on children's outcomes, for the type of family complexity we investigate, our analysis points to the dominant role of selection (i.e., unobserved characteristics that affect both fathers' MPF and child outcomes). We find that the association between a father's previous childless marriage and his children's educational outcomes is similar to that between a father's MPF and his children's educational outcomes. This is strong evidence that unobserved characteristics of the father rather than competition for resources or later birth cause the children in MPF fathers' second families to experience worse educational outcomes.

The Literature on Fathers' MPF

It is easier to measure the prevalence of MPF than its effects. Using the National Survey of Family Growth, Guzzo (2014) found that in the United States, 13% of men and 19% of women aged 40–44 have had children with more than one partner.[3] But not all men are fathers, and not all fathers have two or more children. Thus, alternative measures of MPF also convey important information. For example, Guzzo reported that 17% of fathers and 22.5% of fathers with two or more children have had MPF.[4]

Using Norwegian register data for the period 1971–2006, Lappegård and Rønsen (2013) analyzed socioeconomic differences in fathers' MPF for men born between 1955 and 1984. On average, 8% of fathers in their sample had a multipartner second birth, and MPF was U-shaped, being more likely for both low- and high-income men. Because a large fraction of the cohorts in their study were still relatively young, the numbers are not directly comparable to those that Guzzo (2014) calculated for the United States. Using Norwegian register data and focusing on MPF by age 45 for men and women born in 1968–1970, we find that 11% of men and 14.5% of women have had children with more than one partner. Restricting our attention to parents, we find that MPF prevalence rises to 14% for fathers and to 16.5% for mothers.

[3] 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." Using the National Survey of Family Growth, Guzzo and Furstenberg (2007) and Manlove et al. (2008) documented the prevalence of U.S. fathers' MPF and found that it is associated with economic disadvantage.

[4] See Guzzo and Dorius (2016) for a table summarizing studies of the prevalence of MPF in the United States. See Joyner et al. (2012) and Amorim and Tach (2019) for additional evidence.

Fathers' MPF and Outcomes for Children

Fomby and Osborne (2017) and Carlson and Furstenberg (2007) used U.S. Fragile Families data to analyze children's behavior, but the Fragile Families children in that survey were not old enough to allow us to analyze high school or college graduation. Fomby et al. (2016) used the Early Childhood Longitudinal Study-Birth Cohort, but these data do not include observations of children beyond kindergarten. Other researchers have examined the effects of family disruption and complexity in Norway and Sweden. Steele et al. (2009) found that family disruption is adversely associated with children's educational outcomes in Norway, and Björklund et al. (2007) found that the association between family complexity and children's education and income outcomes is very similar in Sweden and the United States.

Mechanisms of Disadvantage

Economists, sociologists, and psychologists emphasize somewhat different mechanisms through which family structure might affect outcomes for children. As economists, we think of family structure as a mechanism that facilitates parental investments of time and money in children's human capital or as a proxy for such investments. For example, a father's child support obligations for the children in his first family might create resource competition between those children and the children in his second family, thus reducing the resources available for investments in the human capital of the children in his second family.

Sociologists and psychologists have suggested that family structure could operate not only through resources but also through other mechanisms. For example, children from nuclear families might receive more consistent parenting and more supervision, parental support, and parental control than children from single-parent families (Cherlin and Furstenberg 1994; Hofferth and Anderson 2003) or blended families (Cherlin 1978), perhaps resulting in better educational and socioeconomic outcomes.

We investigate two mechanisms that may underlie the substantial and statistically significant association between fathers' MPF and children's worse educational outcomes: resource competition and later birth. The resource competition hypothesis posits that the children in the father's first family compete with the children in his second family for resources, such as money, time, and attention. That is, the children in the first family drain away resources that otherwise would have gone to the children in the father's second family, adversely affecting the educational outcomes of the children in the father's second family. An underlying assumption is that, on average, fathers in simple and complex nuclear families have the same preferences, beliefs, information, personalities, and parenting styles. The resource competition hypothesis therefore attributes differences in children's educational outcomes to differences in the circumstances facing MPF fathers—specifically, to their obligations to the children in their first family.[5] Using the Fragile Families data, Carlson and Furstenberg (2007) found evidence of resource competition leading to disadvantage in fathers' second families.

[5] Economists model the allocation of household resources as determined by parents' preferences, beliefs, and information. Economists seldom discus personality or parenting style. Exceptions include Lundberg

Viewing birth order from the father's perspective, the later birth hypothesis implies that estimates are likely to misattribute the effect of birth order to fathers' MPF because later-born children of some fathers are compared with the firstborn children of other fathers. In complex nuclear families, the oldest child in the father's second family is the firstborn child of the mother but not the father. Researchers have investigated the causal effects of birth order on children's outcomes (Bertoni and Brunello 2016; Black et al. 2005, 2011, 2016; Black et al. 2018; Hotz and Pantano 2015). Using Norwegian data, Black et al. (2005) found that firstborn children have better educational outcomes than children of higher birth order. This older literature focuses on parity—that is, birth order from the mother's perspective. Lillehagen and Isungset (2020) used Norwegian data to investigate birth order from the father's perspective. They found that children born to MPF fathers have better educational outcomes than their older half-siblings. They concluded that maternal resources may contribute to negative birth order effects.

The Selection Hypothesis

Investigating the association between family instability and child outcomes, Fomby and Cherlin (2007:181) wrote:

> The association between multiple transitions and negative child outcomes does not necessarily imply that the former causes the latter. In fact, multiple transitions and negative child outcomes may be associated with each other through common causal factors reflected in the parents' antecedent behaviors and attributes. We call this the *selection hypothesis*.

McLanahan et al. (2013:422), concluding their analysis of the "causal effects of father absence," wrote that "despite the robust evidence that father absence affects social-emotional outcomes throughout the life course, these studies also clearly show a role for selection in the relationship between family structure and child outcomes." Furstenberg (2014:27) also emphasized the importance of selection in addressing family complexity:

> 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 (2014) that we should avoid rushing to judgment about the causal effect of family complexity on children's outcomes.

In the context of fathers' MPF, the selection hypothesis posits that, on average, the fathers with MPF and those without MPF differ in observed and unobserved characteristics and that these characteristics account for the observed differences in children's educational outcomes. The selection hypothesis suggests that when observable characteristics

(2012), which analyzed personality, and Cobb-Clark et al. (2019) and Doepke and Zilbotti (2017, 2019), which analyzed parenting style.

are controlled for, unobserved parental characteristics correlated with fathers' MPF may be associated with patterns of household expenditures or the allocation of goods and time within the household that favor parental consumption over investment in children's human capital. This focus on expenditure patterns and the allocation of goods and time within the household is standard in economists' models of household behavior (Behrman 1997:128). The unobserved characteristics may include preferences, beliefs, information, personalities, or parenting styles. Perhaps MPF fathers are less inclined to invest in their children or have different beliefs about what constitutes effective parenting. Or perhaps fathers' MPF is associated with less competent or less devoted parenting, less investment in personal relationships with mothers and children, or more marital conflict. According to the selection hypothesis, whether the father has a first family is an indicator of these or other unobserved characteristics. In the jargon of economics, the presence of a first family is an indicator of the father's "type."

The Norwegian Context, Family Types, and Covariates

All children in Norway attend compulsory school, which they usually complete the year they reach age 16. After 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 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, 97% to 98% of children graduating from compulsory school in 2002–2004 enrolled in secondary education, but only about 70% of each cohort had completed secondary education five years later (Falch et al. 2014). Although the returns to schooling are lower in Norway than in the United States (Dolton et al. 2009), completed formal education is increasingly important for earnings prospects given the effect of international trade and technological change in lowering the demand for low-skilled workers.

The Norwegian registers do not provide information about custody arrangements, but they do report household composition, including the presence of half-siblings. Because we restrict our attention to nuclear families, no half-siblings are reported as residents in the households we consider.

During our sample time frame, parents with children from a previous relationship either paid or received child support for the children from the previous relationship, depending on whether they have physical custody. Hence, MPF fathers were legally obligated to pay child support.[6] If a noncustodial parent refused to pay child support,

[6] Daily physical custody is granted to the parent with whom the child lives most of the time. During our sample time frame, mothers had daily physical custody in almost 90% of cases (Jensen and Clausen 2000). Survey statistics from 2001–2002 on father–child contact after parental breakup show that approximately 60% of nonresident fathers have a written or oral agreement about contact with the child and that 57% of

the government collected the payment via payroll deduction. Required child support payments to the custodial parent depended on the total number of children of the noncustodial parent, the number of joint children living with the custodial parent, and the noncustodial parent's income. The formula specified a percentage of the noncustodial parent's gross income as a function of his or her total number of children: 11% for one child, 18% for two, 24% for three, and 28% for four or more children. For example, a father with two children—one child from his first family and one child in his second family—paid his first wife 9% of his income in child support (1/2 × 18). A father with three children—two from his first family and one from his second family—paid his first wife 16% of his income in child support (2/3 × 24). Noncustodial parents were legally obligated to provide financial support until their children turn 18 or until they completed secondary school, usually at age 19.[7] The child support formula implied that noncustodial parents make substantial financial transfers to children in their first families.

Parents who live with their children 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 US$110 per month in 2015 dollars) and is tax exempt. If parents are married or cohabiting, the child benefit is usually transferred to the mother. If parents are not married or cohabiting, the custodial parent receives an extended child benefit, amounting to the child benefit for one child more than she or he lives with.

Data and Family Type Definitions

Our analysis is based on individual-level data from official Norwegian registers for 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, birth month, links to biological parents, and country of birth), socioeconomic 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 mothers' and fathers' MPF. Combining this information with data on household composition, we can identify the family structures in which each child lived each year from birth until age 18.

We use the term *eligible child* to refer to a child who spent their entire childhood in a nuclear family. We include all eligible children in our analysis rather than selecting one focal child from each family.[8] For our empirical work, we define a *nuclear family* as a household in which the eligible child spent their entire childhood living with both biological parents and in which all the other children were also the joint children of

the nonresident fathers report having met with their children within the last week (Skevik 2006). See Tjøtta and Vaage (2008) for a comprehensive description of the Norwegian child support system.

[7] Most Norwegian colleges and universities charge modest fees and do not charge tuition. Child support paid was deducted from the noncustodial parent's taxable income, and child support received was taxable income for the custodial parent. Until 2002, the noncustodial parent also had to pay travel costs related to visits of nonresident children.

[8] We use "eligible child" as a shorthand, recognizing that approximately 8% of families in our sample have more than one eligible child.

these parents and, hence, full siblings.[9] The nuclear second family can be a married or cohabiting union. Data on marriage are available for all years, but data on cohabitation are available only starting in 1986.

The family structure literature often attributes the outcomes of children in complex families to family structure transitions (for an early example, see Wu and Martinson 1993). But family structure transitions cannot explain our results because we restrict our attention to nuclear families. This restriction allows us to rule out family structure transitions as an explanation for worse educational outcomes associated with fathers' MPF. We use the following taxonomy to analyze the effects of fathers' MPF:

Simple nuclear family (NFo): Neither the father nor the mother had children from another relationship.

Complex nuclear family (NF+): The father, but not the mother, had at least one child from another relationship living elsewhere.

Nonnuclear family (NNF): The child spent at least one year in a household without both biological parents or in a household with at least one child who was not a joint child of the biological parents and, hence, not a full sibling—for example, in a single-parent, a blended, or a nonparental family (e.g., with grandparents).[10]

Our starting point is the population of 146,923 children born in Norway between January 1, 1986, and December 31, 1988, with Norwegian-born parents registered as living in Norway. We begin with the 1986 birth cohort because it is the earliest cohort for which we have complete information about household composition. We end with the 1988 birth cohort because we want to follow all the children into young adulthood to obtain information on completed higher education, and 2014 is the latest year for which we have observations.

Table 1 shows the distribution of eligible children by family type. Among all children, 54% grew up with both biological parents until age 18, and 46% did not. Of the 54% who grew up with both biological parents, 95% grew up in nuclear families, and 5% grew up in blended families. Among those who grew up with both biological parents, the vast majority (90.7%) grew up in simple nuclear families (NFo = 72,052, in 66,781 families), and somewhat more than 4% grew up in complex nuclear families (NF+ = 3,208, in 2,983 families).[11] Of the 2,983 fathers in complex nuclear families, 70% (2,082) have only one child from a previous relationship; of those, 929 (45%) were previously married. There are 901 fathers with more than one child from a previous relationship, 810 (90%) of whom were previously married. Only 176 of those with two or more children (6% of fathers with MPF) had those children with two or more women.

[9] Our definition of a nuclear family excludes families with adopted children.

[10] We have not included children from NNF because our identification strategy requires children who never experienced a family structure transition.

[11] The remaining 5.3% (N = 4,206) of the children who spent their entire childhood with both biological parents grew up in what Ginther and Pollak (2004) called "stable blended families": they spent their entire childhood with both biological parents and some portion of it with half-siblings.

Table 1 Family type: Children, full siblings, and half-siblings

Number of Children Born in 1986–1988 to Norwegian-born Parents	146,923
Number of Children Living With Both Biological Parents Until Age 18	79,466
Number of 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
Number of 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-sibling	70.0
% two or more nonresident half-siblings	30.0
% of children nonresident half-siblings aged 0–5	17.0
% of children nonresident half-siblings aged 6–10	37.4
% of children nonresident half-siblings aged 11+	56.3
% of children nonresident half-siblings with 0–5 years of overlap	18.5
% of children nonresident half-siblings with 6–10 years of overlap	30.1
% of children nonresident half-siblings with 11+ years of overlap	51.4
Number of Children in Nonnuclear Families (NNF)	63,258
% no siblings	4.4
% no full siblings	26.0
% one full sibling	42.3
% two or more full siblings	31.7
% no half-sibling	51.7
% one half-sibling	18.4
% two or more half-siblings	29.9
% half-siblings both parents	17.0

Notes: Complex is defined as having at least one nonresident half-sibling. We omit 4,199 children from this classification because their father's identity is missing, their place of living (living abroad mostly) is missing, or the child died before age 18. Among those who grew up with both biological parents are 4,206 children who grew up with both parents in different kinds of blended families. The number of siblings and half-siblings is counted at age 18. Among our 75,260 eligible children in NFo and NF+ families, 7.75% have full siblings who were born in 1986–1988 and, hence, are also included in our analysis.

Outcome Variables and Explanatory Variables

We analyze four measures of educational outcomes. Two are based on the grades received at the completion of compulsory school, usually the year a child turns 16. Grades range from 1 to 6 in 11 subjects. Our first measure, *Grades*, is a normalized variable calculated by standardizing the sum of all grades to a distribution with a mean of 0 and variance of 1. Our second measure, *Low Grades*, is based on the grades obtained in the three core subjects (mathematics, Norwegian, and English); we use these grades to construct an indicator variable equal to 1 if the child received a grade below 4 in all three core subjects, indicating weak qualifications for attending secondary school. Our third measure, *Dropout*, is an indicator variable for not completing secondary school by age 22.[12] Our fourth measure, *Bachelor's*, is an

[12] Thus, *Dropout* includes both children who entered secondary school and failed to graduate by age 22 and the less than 3% who did not enter secondary school.

Table 2 Children's educational outcomes by family type

Family Type	Outcome	*n*	Mean	SD
Simple Nuclear Family (NFo)	Grades	70,992	0.222	0.992
	Low Grades	72,052	0.252	
	Dropout	71,910	0.172	
	Bachelor's	71,930	0.513	
Complex Nuclear Family (NF+)	Grades	3,147	–0.155	1.013
	Low Grades	3,208	0.300	
	Dropout	3,201	0.240	
	Bachelor's	3,202	0.442	
Nonnuclear Family (NNF)	Grades	61,526	–0.466	1.120
	Low Grades	63,258	0.403	
	Dropout	63,036	0.368	
	Bachelor's	63,065	0.336	

Notes: Grades represents the normalized sum of grades at completion of compulsory school. *Low Grades* is an indicator for no grade or a grade below 4 in three core subjects (math, Norwegian, and English). *Dropout* is an indicator for not having completed secondary school by age 22. *Bachelor's* is an indicator for having completed a bachelor's degree by age 26.

indicator variable for whether the child completed a bachelor's degree or higher by age 26.

Table 2 and Figure 1 show the averages of each of our four educational outcomes by family type. For each educational outcome, the children from simple nuclear families fare best, followed by those from complex nuclear families, and then by those from nonnuclear families.[13]

We use previous studies to guide our choice of covariates in the regressions (Björklund et al. 2007; Ginther and Pollak 2004). Our goal is to control for observable inputs associated with children's educational outcomes, including parental educational attainment and earnings. Variables such as parents' marital status, age, and education are measured when the eligible child was born. For the years when the child was 0–18 years old, we also calculate the percentage of time that (1) the child lived in an urban location, (2) the mother was out of the labor force, (3) the father was out of the labor force, (4) the mother received a disability pension, and (5) the father received a disability pension. For mothers' and fathers' annual income (sum of earnings, capital income, and transfers) and for household net financial wealth, we average variables measured over the years when the child was 7–18 years old. For children, we include information on gender, month and year of birth, parity (i.e., birth order from the mother's perspective), number of full siblings, and an indicator of whether the child moved to a different municipality when school aged.

Table 3 shows systematic differences in the explanatory variables as we move from simple nuclear families (NFo) to complex nuclear families (NF+) and further to

[13] Missing data on outcome variables are mainly due to exemption from being graded (for *Grades* and *Low Grades*) and death or migration after age 18 (for *Dropout* and *Bachelor's*). Although 75,260 children are registered as living with their parents until age 18, the complete set of grades is available for only 74,139 of them.

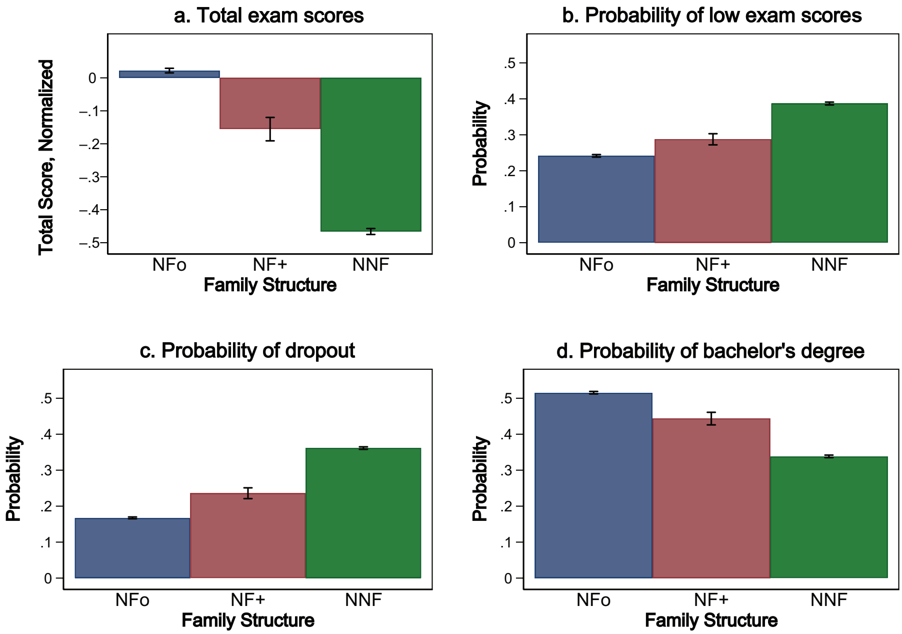

Fig. 1 Normalized total exam scores for compulsory school (panel a), probability of low exam scores (panel b), probability of dropping out of secondary school (panel c), and probability of obtaining a bachelor's degree (panel d), by family structure. Whiskers indicate 95% confidence intervals. NFo = simple nuclear family. NF+ = complex nuclear family. NNF = nonnuclear family.

nonnuclear families (NNF). For example, the likelihood that parents were not married at the birth of the child increases, and mothers are much less likely to be college or university graduates: 31% of mothers in simple nuclear families, 26% of those in complex nuclear families, and only 22% of those in nonnuclear families were college or university graduates. Consistent with the education figures, income and wealth are higher in simple nuclear families than in complex nuclear families.

Descriptive Regressions

In this section, we use descriptive regressions to summarize the patterns in the data; in the two following sections, we discuss causal mechanisms. We start by comparing educational outcomes of children from simple (NFo) and complex (NF+) nuclear families, controlling for observable household, parent, and child characteristics. We use ordinary least squares (OLS) and probit regressions to examine the association between fathers' MPF and our four measures of children's educational outcomes: *Grades*, *Low Grades*, *Dropout*, and *Bachelor's*. Our first specification includes controls for gender and birth year. Our second controls for gender, birth year, county of residence, the percentage of time a child lived in an urban location, and parents' education and age. Our third specification, which we refer to as the "comprehensive specification," controls for gender, birth year, county of residence, parents' education

Table 3 Descriptive statistics for covariates by family type

	NFo		NF+		NNF	
Variable	Mean	SD	Mean	SD	Mean	SD
Parents Cohabited at Birth	0.134		0.296		0.451	
Number of Full Siblings	1.8	1.1	1.5	1.0	1.1	1.0
Father's Age	30.9	4.9	35.4	6.1	29.1	5.9
Mother's Age	28.4	4.5	29.2	4.6	26.1	5.04
Father's Education						
Primary school	0.178		0.255		0.312	
Some secondary school	0.182		0.249		0.162	
Secondary school	0.329		0.270		0.315	
University/college	0.310		0.219		0.206	
Education missing	0.002		0.006		0.006	
Mother's Education						
Primary school	0.264		0.296		0.372	
Some secondary school	0.213		0.250		0.179	
Secondary school	0.215		0.190		0.216	
University/college	0.307		0.262		0.222	
Education missing	0.001		0.003		0.004	
Father's Income	451.7	239.8	412.0	226.5	538.6	704.1
Mother's Income	210.1	119.9	226.5	127.6	363.1	344.0
Household Wealth	1,307.5	4,945.9	1,258.6	7,060.6	1,362.9	7,437.6
% of Childhood (0–18)						
Urban area	75.1	42.4	74.9	42.2	78.5	38.6
Father no earnings	2.8	12.7	9.0	23.3	23.1	35.1
Mother no earnings	8.1	21.8	9.9	24.0	31.5	37.6
Mother on disability pension	2.6	12.8	8.1	22.2	2.3	10.5
Father on disability pension	3.8	15.6	5.5	18.6	2.0	11.0
Household Size	4.7	1.0	4.4	0.9	na	
Family Moved When Child Aged 7–17	0.548		0.563		0.353	
Number of Observations	72,052		3,208		63,258	

Notes: Parents' marital status, age, and education are measured when the eligible child was born. Parents' income includes annual earnings, capital income, and transfers, averaged over the years when the child was 7–18 years old and measured in NOK 1,000 (2015). Household wealth is the sum of parents' net financial wealth, averaged over the years when the child was 7–18 years old and measured in NOK 1,000 (2015). For NNF children, this variable does not reflect actual household wealth because parents did not live together throughout the child's entire childhood. Additional covariates in regressions are gender, birth year and month, parity (from the mother's perspective), the number of full siblings, and county of residence at age 10. Because the NNF measures of income and wealth are summed across two parents who do not live together, these measures are not directly comparable to those of NFo and NF+ families. NFo = simple nuclear family. NF+ = complex nuclear family. NNF = nonnuclear family. na = not available.

and age, parity, parents' labor force and disability status, household size, income, wealth, and mobility patterns. In our discussion of the results, we rely primarily on the comprehensive specification.

Children in NF+ families experience worse educational outcomes than children in NFo families. Table 4 reports estimates of the association between fathers' MPF and each of our four educational outcomes. As we add control variables, our estimates of the effects of fathers' MPF become smaller in magnitude. However, even with our

Table 4 Estimates of the effect of fathers' MPF on children's educational outcomes

Variable	Grades (1)	Grades (2)	Grades (3)	Grades (4)	Low Grades (1)	Low Grades (2)	Low Grades (3)	Low Grades (4)
Nuclear Family+	−0.182***	−0.141***	−0.099***	−0.115***	0.051***	0.045***	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***	−1.645***	−2.233***	−2.232***				
	[0.014]	[0.106]	[0.120]	[0.120]				
Number of Observations	74,139	74,139	74,139	74,139	75,260	75,260	75,260	75,260
R^2	.079	.257	.278	.278				
	Dropout (1)	Dropout (2)	Dropout (3)	Dropout (4)	Bachelor's (1)	Bachelor's (2)	Bachelor's (3)	Bachelor's (4)
Nuclear Family+	0.069***	0.062***	0.039***	0.035**	−0.077***	−0.071***	−0.052***	−0.064***
	[0.008]	[0.008]	[0.007]	[0.011]	[0.009]	[0.010]	[0.010]	[0.014]
Nuclear Family+ × Male				0.007				0.024
				[0.013]				[0.020]
Number of Observations	75,111	75,111	75,111	75,111	75,132	75,132	75,132	75,132

Notes: Coefficients for *Grades* are OLS estimates. Coefficients for *Low Grades*, *Dropout*, and *Bachelor's* are probit estimates showing marginal effects. Robust standard errors are shown in brackets. In model 1, additional covariates include dummy variables for male, birth year, and birth month. Model 2 includes model 1 covariates plus parents' age, birth order from the mother's perspective, and dummy variables for parents' education. Model 3 is a comprehensive specification with the full set of covariates, including those in model 2 plus dummy variables for fathers' income quartile, log of mothers' income, household wealth and size, percentage of childhood characteristics, and county of residence at age 10, and dummy variables for the family having moved during schooling age and parents' cohabiting at birth (not legally married). Model 4 is a comprehensive specification plus the interaction between male and a dummy variable for complex nuclear family (NF+).

**$p<.01$; ***$p<.001$

comprehensive specification, fathers' MPF still accounts for a substantial part of the differences in all four of our measures of children's educational outcomes.[14]

We focus on the two long-term outcomes: *Dropout* and *Bachelor's*.[15] The descriptive statistics in Table 2 show that *Dropout* for NF+ is 24%, compared with 17% for NFo. Bachelor's for NF+ is 44%, compared with 51% for NFo. These differences reflect both the effect of fathers' MPF and differences in covariates. The covariates exacerbate the adverse effects of fathers' MPF. When we control for the full set of covariates in our comprehensive specification, fathers' MPF is associated with a 3.9-percentage-point ($p<.001$) increase in *Dropout* and a 5.2-percentage-point ($p<.001$) decrease in *Bachelor's* (Table 4).

We can use our estimates to calculate a counterfactual prediction of what *Dropout* and *Bachelor's* would have been for children from families with the same covariates as NF+ but in which the fathers did not have children from another relationship (see Table A1 in the online appendix). These counterfactual predictions show that although both fathers' MPF and differences in the covariates contribute to the worse educational outcomes for children in NF+ families, the primary factor is fathers' MPF.

Falch et al. (2014) showed that boys in Norway have worse educational outcomes than girls. To investigate the association between fathers' MPF and gender differences, our fourth specification interacts the child being male with fathers' MPF. We do not find that fathers' MPF is associated with a significant gender effect.

Resource Competition

Number of Children

Under the resource competition hypothesis, the connection between more children in the father's first family and educational outcomes for the children in his second family is straightforward: more children imply higher child support payments, and higher child support payments imply fewer resources available to the father's second family.[16]

To test this hypothesis, we add controls for one nonresident half-sibling or two or more nonresident half-siblings.[17] The average number of nonresident half-siblings in NF+ families is less than two, with 70% of NF+ children having one nonresident half-sibling. We report the estimates from the simple and comprehensive specifications in Table 5. If resource competition explains our results, then the estimated adverse effect

[14] We also estimated propensity score matching models to determine whether our results were robust to this alternative estimation method for selection on observable characteristics. We found that NF+ coefficients had the same sign and significance as those reported here (results not shown).

[15] Estimates from the comprehensive specification indicate that fathers' MPF is associated with 10% of a standard deviation lower grades ($p<.001$), where the rate for NFo is 0.022; it is also associated with a 3.2-percentage-point increase in the probability of having low grades ($p<.001$), where the rate for NFo is 0.258. Using the Adolescent Health data from the United States, Lei and Lundberg (2020) found that grades are not good predictors of long-term educational outcomes for boys.

[16] We are grateful to Wendy Manning for suggesting that we investigate resource competition.

[17] As noted earlier, if there is one joint child in the home, and the father has one child outside the home, he must pay 9% of his income in child support for his noncustodial child; if he has two children outside the home, he must pay 16% of his income in child support.

Table 5 Estimates of the effect of fathers' MPF on children's educational outcomes, controlling for the number of half-siblings

Variable	Grades (1)	Grades (3)	Low Grades (1)	Low Grades (3)	Dropout (1)	Dropout (3)	Bachelor's (1)	Bachelor's (3)
Nuclear Family, 1 Half-sibling	−0.183***	−0.095***	0.054***	0.032**	0.069***	0.039***	−0.077***	−0.046***
	[0.021]	[0.019]	[0.010]	[0.010]	[0.009]	[0.009]	[0.011]	[0.012]
Nuclear Family, 2+ Half-siblings	−0.179***	−0.112***	0.044**	0.032*	0.069***	0.041**	−0.075***	−0.068***
	[0.033]	[0.031]	[0.015]	[0.015]	[0.014]	[0.014]	[0.016]	[0.018]
Constant	0.323***	−2.234***						
	[0.014]	[0.120]						
1 Half-sibling = 2+ Half-siblings[a]		0.23		0.01		0.33		1.16
		(.63)		(.97)		(.86)		(.31)
Number of Observations	74,139	74,139	75,260	75,260	75,111	75,111	75,132	75,132
R^2	.079	.278						

Notes: Coefficients for *Grades* are OLS estimates. Coefficients for *Low Grades*, *Dropout*, and *Bachelor's* are probit estimates showing marginal effects. Robust standard errors are shown in brackets. In model 1, additional covariates include dummy variables for male, birth year, and birth month. Model 3 is a comprehensive specification with the full set of covariates.

[a] Hypothesis test of the difference in estimated coefficients, with p values shown in parentheses.

$^{*}p<.05$; $^{**}p<.01$; $^{***}p<.001$

of half-siblings should increase with the number of half-siblings. The results show that for all educational outcomes, the coefficient on two or more nonresident half-siblings is statistically significant and slightly larger than that for one nonresident half-sibling. However, having two or more nonresident half-siblings is not significantly different than having only one nonresident half-sibling in NF+ families: one half-sibling and two half-siblings reduced educational outcomes by similar amounts compared with NFo children.

Age Overlap Between Children

The connection between the age overlap of the children from the father's first and second families provides another test of the resource competition hypothesis. If the children in the two families are close in age, then the father must pay child support for a greater fraction of the years when the children in his second family are growing up.

If there is one child in the father's first family and one child in his second family, we use the age difference (Δ) between them to construct an indicator of resource competition. Specifically, we use $(20 - \Delta)$ to indicate the number of years the father is required to pay child support during which the child in the second family is 19 or younger.[18] This age-based indicator is associated with legally required child support payments, but it may also be associated with unobserved voluntary transfers of money, time, and attention. If the father's first family has two or more children, we use the age differences (Δ_i) between each child in the father's first family and each eligible child in his second family; our indicator of resource competition with each eligible child is then $\Sigma(20 - \Delta_k)$.

To test the age-overlap hypothesis, we use the sum of age differences between half-siblings in the first family who were younger than 20 when the child in the second family was born, $\Sigma(20 - \Delta_k)$. We include dummy variables for the total number of years of overlap (0–5, 6–10, and 11+) to provide a measure of the total amount of child support and the duration of that support during the childhood of the eligible child.[19] If resource competition matters, we would expect the magnitude of the estimated effect of half-siblings to increase with more years of overlap.

Table 6 displays the results for our comprehensive specification. We test whether the coefficients for 0–5, 6–10, and 11+ years differ significantly from one another. In nuclear families, the probabilities of low grades, dropping out of secondary school, and having a bachelor's degree all increase in absolute size the more financial responsibility a father has for nonresident half-siblings. The association between having nonresident half-siblings who are younger than 20 years old for 11+ years is largest and statistically significant for all four outcomes. However, the statistical tests fail to reject the null hypothesis that having half-siblings for 11+ years and 0–5 years is the same, the null hypothesis that 6–10 and 11+ years is the same, and the null hypothesis that having half-siblings for a total of 0–5 child years and 6–10 child years is the same.

[18] We consider only the children in the father's first family who were younger than 20 when the first child in his second family was born.

[19] The dummy variable for 0–5 is also equal to 1 if the father has a child from a previous relationship who is 20 or more years older than the eligible child.

Table 6 Estimates of the effect of fathers' MPF on children's educational outcomes, controlling for number and years of overlap with half-siblings

Variable	Grades (1)	Grades (3)	Low Grades (1)	Low Grades (3)	Dropout (1)	Dropout (3)	Bachelor's (1)	Bachelor's (3)
0–5 Years Overlap With Half-siblings	–0.144***	–0.082*	0.025	0.013	0.051**	0.028	–0.044*	–0.039
	[0.041]	[0.039]	[0.019]	[0.019]	[0.017]	[0.017]	[0.021]	[0.024]
6–10 Years Overlap With Half-siblings	–0.151***	–0.081**	0.036*	0.023	0.050***	0.028*	–0.053**	–0.035*
	[0.031]	[0.028]	[0.015]	[0.015]	[0.014]	[0.013]	[0.016]	[0.018]
11+ Years Overlap With Half-siblings	–0.214***	–0.116***	0.069***	0.043***	0.087***	0.050***	–0.102***	–0.067***
	[0.025]	[0.023]	[0.012]	[0.012]	[0.011]	[0.010]	[0.012]	[0.014]
Constant	0.323***	–2.231***						
	[0.014]	[0.120]						
0–5 Years = 6–10 Years Overlap[a]		0.00		0.18		0.00		0.02
		(.99)		(.68)		(.99)		(.89)
6–10 Years = 11+ Years Overlap[a]		0.93		1.12		1.91		2.03
		(.34)		(.29)		(.17)		(.15)
11+ years = 0–5 Years Overlap[a]		0.60		1.79		1.28		1.04
		(.44)		(.18)		(.26)		(.31)
Number of Observations	74,139	74,139	75,260	75,260	75,111	75,111	75,132	75,132
R^2	0.080	0.278						

Notes: Coefficients for *Grades* are OLS estimates. Coefficients for *Low Grades*, *Dropout*, and *Bachelor's* are probit estimates showing marginal effects. Robust standard errors are shown in brackets. In model 1, additional covariates include dummy variables for male, birth year, and birth month. Model 3 is a comprehensive specification with the full set of covariates.

[a] Hypothesis test of the difference in estimated coefficients, with p values shown in parentheses.

$^{*}p<.05$; $^{**}p<.01$; $^{***}p<.001$

Table 7 Estimates of the effect of fathers' MPF on children's educational outcomes interacted with income quartile

Variable	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 × Nuclear+	−0.031	−0.027	−0.012	−0.014	0.035	0.026	−0.006	0.001
	[0.051]	[0.046]	[0.023]	[0.023]	[0.023]	[0.022]	[0.028]	[0.029]
Income Quartile 2 × Nuclear+	−0.071	−0.080	−0.022	−0.012	0.012	0.011	−0.004	−0.007
	[0.050]	[0.046]	[0.022]	[0.022]	[0.020]	[0.020]	[0.027]	[0.029]
Income Quartile 1 × Nuclear+	−0.003	0.037	−0.020	−0.027	−0.003	−0.021	0.002	0.016
	[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]						
Number of Observations	74,139	74,139	75,261	75,261	75,112	75,112	75,133	75,133

Notes: Coefficients for *Grades* are OLS estimates. Coefficients for *Low Grades*, *Dropout*, and *Bachelor's* are probit estimates showing marginal effects. Robust standard errors are shown in brackets. In model 1, additional covariates include dummy variables for male, birth year, and birth month. Model 3 is a comprehensive specification with the full set of covariates.

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

Fathers' Income Quartile

Finally, we investigate whether the father's income quartile interacted with his MPF is associated with the educational outcomes of children in his second family.[20] In these regressions estimating the association between income and children's educational outcomes, the highest income quartile is the omitted category. If the resource competition hypothesis were correct, fathers' MPF would be more harmful to the children of fathers in the lowest income quartile.[21] We find that as income decreases relative to the highest levels, the lower income quartiles are associated with worse educational outcomes. Furthermore, the point estimates on fathers' MPF reported in Table 7 do not differ substantially from those reported in Table 4. None of the coefficients on fathers' income quartile interacted with fathers' MPF are statistically significant. Thus, fathers' income quartile provides no support for the resource competition hypothesis.

Taken together, the results in this section do not support the hypothesis that resource competition explains the association between fathers' MPF and children's educational outcomes.

Birth Order

Next, we consider whether birth order explains our results. Black et al. (2005) showed that mothers' firstborn children in Norway have better educational outcomes than later-born children, and Black et al. (2011) showed that mothers' firstborn children have higher IQs, which is positively correlated with educational attainment. Lillehagen and Isungset (2020) considered birth order from the fathers' perspective and found that the oldest children in the father's second family have better educational outcomes than the oldest children in the first family. The oldest child in NF+ families is the firstborn child of the mother but not the firstborn child of the father. To examine whether firstborn effects are driving our MPF estimates, we divide the sample into the firstborn children of the mother and the later-born children of both parents.

The results are reported in Table 8. The first rows repeat our main results from Table 4 to ease comparison. In the middle panel, we limit the sample to firstborn children. The coefficient estimates are remarkably similar in magnitude and statistical significance to the results for our full sample. In the bottom panel, we limit the sample to all later-born children. Comparing later-born children and our full-sample estimates, we find that the coefficient estimates are quite similar for grades, low grades, and the probability of dropping out. However, the coefficient estimate for obtaining a bachelor's degree is lower, perhaps reflecting the lower educational attainment of children of higher birth orders.

[20] In estimates not reported, we found no effect of living in a different economic region than the nonresident half-siblings on educational outcomes for NF+ children.

[21] Løken et al. (2012) showed that income affects child outcomes near the bottom of the income distribution but not near the top.

Table 8 Estimates of the effect of fathers' MPF on children's educational outcomes, with the sample stratified by birth order

Variable	Grades (1)	Grades (3)	Low Grades (1)	Low Grades (3)	Dropout (1)	Dropout (3)	Bachelor's (1)	Bachelor's (3)
Full Sample								
Nuclear family+	–0.182***	–0.099***	0.051***	0.032***	0.069***	0.039***	–0.077***	–0.052***
	[0.018]	[0.017]	[0.008]	[0.009]	[0.008]	[0.009]	[0.009]	[0.010]
Constant	0.323***	–2.233***						
	[0.014]	[0.120]						
R^2	0.079	0.278						
Number of observations	74,139	74,139	75,260	75,260	75,111	75,111	75,132	75,132
Firstborns								
Nuclear family+	–0.183***	–0.102***	0.050***	0.036**	0.065***	0.041***	–0.089***	–0.074***
	[0.025]	[0.024]	[0.012]	[0.012]	[0.011]	[0.011]	[0.013]	[0.016]
Constant	0.440***	–2.698***						
	[0.021]	[0.190]						
R^2	27,627	27,627	28,040	28,040	27,984	27,979	27,993	27,993
Number of observations	0.082	0.275						
Later-borns								
Nuclear family+	–0.214***	–0.099***	0.062***	0.028*	0.078***	0.037***	–0.076***	–0.031*
	[0.025]	[0.023]	[0.012]	[0.012]	[0.011]	[0.010]	[0.012]	[0.014]
Constant	0.251***	–2.174***						
	[0.018]	[0.195]						
R^2	0.080	0.275						
Number of observations	46,512	46,512	47,220	47,220	47,127	47,127	47,139	47,139

Notes: Coefficients for *Grades* are OLS estimates. Coefficients for *Low Grades*, *Dropout*, and *Bachelor's* are probit estimates showing marginal effects. Robust standard errors are shown in brackets. In model 1, additional covariates include dummy variables for male, birth year, and birth month. Model 3 is a comprehensive specification with the full set of covariates.

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

Selection

The selection hypothesis provides an alternative to the resource competition and birth order hypotheses to explain the worse educational outcomes for NF+ children. The simplest version of the selection hypothesis is that men who have children from previous relationships differ in unobserved characteristics from men who do not. A more complex version allows for the possibility that women who partner with men who have previous children differ in unobserved characteristics from women who do not. Because our data do not allow us to distinguish among these two versions of the selection hypothesis, we treat them as a single hypothesis.

To assess the plausibility of the selection hypothesis, we investigate the outcomes of children in simple nuclear families in which the fathers or mothers had previous childless marriages.[22] If the children in these families experience worse educational outcomes than the children in other simple nuclear families, the explanation cannot be resource competition or birth order because none of these men had previous children. Nor can the explanation be alimony and spousal support because these situations are sufficiently rare in Norway that these men are very unlikely to have financial obligations to their ex-wives.[23]

If selection is driving our MPF results, then fathers with previous childless marriages (FPCM) or the women who partner with them may have unobserved characteristics that adversely affect children's educational outcomes. That is, the characteristics associated with the failure of the father's first marriage are also associated with worse educational outcomes for the children in the nuclear family. As before, we restrict our attention to children who spent their entire childhood in a nuclear family. Our sample of 66,781 simple nuclear families contains 1,010 FPCM.[24] To ease comparison in the top panel of Table 9, we repeat the estimates from our comprehensive specification (Table 4).

In the lower panel of Table 9, we include additional controls for fathers' previous childless marriages. The estimated effects of FPCM are adverse and roughly similar to the estimated effects of fathers' MPF. We test whether the coefficients for FPCM and fathers' MPF are significantly different from one another and reject this hypothesis only for *Grades* ($p < .04$). Thus, the estimated effect of FPCM for the other three outcomes (*Low Grades*, *Dropout*, and *Bachelor's*) is similar in magnitude to that of fathers' MPF, indicating that the children of FPCM have worse educational outcomes than other children from simple nuclear families. The average educational outcomes of children in FPCM families, however, are much better than those in NF+ families because covariates—such as income and wealth, education, and age—offset these adverse effects or more than offset them. For the children in FPCM families, some

[22] We are grateful to David Ribar and Richard Reeves for suggesting these strategies.

[23] According to Thomson Reuters Practical Law, in Norway, "it is unusual for a spouse to be granted spousal maintenance after a divorce" (https://uk.practicallaw.thomsonreuters.com/w-012-2153?transitionType=Default&contextData=(sc.Default)).

[24] We exclude from our analysis the 84 simple nuclear families with 91 children in which both parents had previous childless marriages. In results not reported, we found that the added effect of having a second parent with a previous childless marriage was not statistically significant.

Table 9 Estimates of the effect of fathers' MPF on children's educational outcomes, nuclear families compared with results for fathers' previous childless marriages (FPCM) and mothers' previous childless marriages (MPCM)

Variable	Grades (1)	Grades (3)	Low Grades (1)	Low Grades (3)	Dropout (1)	Dropout (3)	Bachelor's (1)	Bachelor's (3)
Full Sample								
Nuclear family+	–0.182***	–0.099***	0.051***	0.032***	0.069***	0.039***	–0.077***	–0.052***
	[0.018]	[0.017]	[0.008]	[0.009]	[0.008]	[0.009]	[0.009]	[0.010]
Constant	0.323***	–2.233***						
	[0.014]	[0.120]						
R^2	0.079	0.278						
Number of observations	74,139	74,139	75,260	75,260	75,111	75,111	75,132	75,132
Previously Divorced Parents								
Nuclear family+	–0.180***	–0.102***	0.051***	0.034***	0.069***	0.041***	–0.075***	–0.054***
	[0.018]	[0.017]	[0.008]	[0.009]	[0.008]	[0.008]	[0.009]	[0.010]
FPCM	0.056	–0.038	0.011	0.049**	0.013	0.034**	0.036*	–0.035*
	[0.032]	[0.029]	[0.014]	[0.016]	[0.013]	[0.013]	[0.016]	[0.018]
MPCM	0.081*	–0.075*	–0.024	0.031	–0.013	0.022	0.056**	–0.040*
	[0.034]	[0.031]	[0.015]	[0.018]	[0.013]	[0.015]	[0.018]	[0.020]
Constant	0.322***	–2.264***						
	[0.014]	[0.120]						
R^2	0.080	0.278						
Number of observations	74,051	74,051	75,169	75,169	75,020	75,020	75,041	75,041

Notes: Coefficients for *Grades* are OLS estimates. Coefficients for *Low Grades*, *Dropout*, and *Bachelor's* are probit estimates showing marginal effects. Robust standard errors are shown in brackets. Regressions omit 84 families (91 children) in which both parents were previously divorced. In model 1, additional covariates include dummy variables for male, birth year, and birth month. Model 3 is a comprehensive specification with the full set of covariates.

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

educational outcomes are a bit worse than those of children in other NFo families, whereas others are substantially better.

We focus on the two long-term outcomes, *Dropout* and *Bachelor's*.[25] For *Dropout*, the mean outcomes are similar: 18% for FPCM children and 17% for the other NFo children, while for the NF+ children *Dropout* is 24% (see Table A2 in the online appendix). We use our estimates to calculate a counterfactual prediction of *Dropout* for children from families with the same covariates as the families of FPCM but in which the fathers did not have previous childless marriages (see Table A2). The covariates for families with FPCM are more favorable than those for the other NFo families (see Table A3, online appendix). We find that predicted *Dropout* for children in FPCM is worse than that for children in other NFo families. We also test whether the coefficients for FPCM and the coefficients for MPF fathers are equal and can reject the null hypothesis only for grades ($p<.104$). This constitutes powerful evidence in favor of the selection hypothesis.

Although it is not directly relevant to explaining the adverse effects of fathers' MPF, the association between mothers' previous childless marriages (MPCM) and children's educational outcomes provides additional evidence of the importance of selection. We investigate outcomes for children in the 832 simple nuclear families with MPCM. In our comprehensive specification, MPCM significantly reduces both grades and the likelihood of obtaining a bachelor's degree. These estimates of the effect of MPCM are adverse and roughly similar to the estimates of the effect of fathers' MPF (see Table A2). The counterfactual predictions illustrate the importance of covariates as determinants of children's educational outcomes. For both FPCM and MPCM, the covariates offset the adverse effects of previous childless marriages; in contrast, the covariates for NF+ families amplify the adverse effects of fathers' MPF.

Discussion and Conclusion

Until very recently, research on family structure and family complexity emphasized household structure and household complexity. Because of data limitations and because children generally remain in households with their mothers when their parents separate, research has emphasized mothers' MPF while virtually ignoring fathers'. To our knowledge, ours is the first study to investigate the relationship between fathers' MPF and children's adult educational outcomes. Using Norwegian register data, we investigated the association between fathers' MPF and the educational outcomes of the children in fathers' second families that are nuclear: households consisting of a man, a woman, their joint children, and no other children. Controlling for a rich set of covariates, we found that fathers' MPF is associated with substantially and significantly worse educational outcomes for children. Children of MPF fathers are 4 percentage points more likely to drop out of secondary school and 5 percentage points less likely to obtain a bachelor's degree.

[25] Children of FPCM are 4.9 percentage points more likely to have low grades ($p<.01$). The estimated effect on grades is 3.8% of a standard deviation lower, one third the size of the effect of fathers' MPF; this effect is not statistically significant.

Why do children in complex nuclear families have worse educational outcomes than children in simple nuclear families? Competition for resources between the children in fathers' first and second families is a possible explanation, as is birth order. Estimates provide little support for either. Researchers often invoke family structure transitions and associated stress to explain adverse outcomes for children in complex families. For the children we studied, this explanation is a nonstarter because we restricted our analysis to children who never experienced a family structure transition.

Discussing outcomes for children in complex families, Furstenberg (2014) noted the need to consider selection. According to the selection hypothesis, fathers who have children from another relationship may differ in unobserved characteristics (e.g., preferences, beliefs, information) from fathers who do not, and the women who partner with these men may differ from the women who do not. To evaluate the selection hypothesis, we estimated whether children in simple nuclear families whose fathers had previous childless marriages experienced worse educational outcomes than children in simple nuclear families whose fathers did not have previous childless marriages. Controlling for covariates such as income and wealth, education, and age, we found that the association between having a father with a previous childless marriage and children's educational outcomes was similar to the association between having an MPF father and children's educational outcomes. This finding, together with our finding that the data do not support the resource competition hypothesis or the birth order hypothesis, suggests that selection is the primary explanation for the association between fathers' MPF and the worse educational outcomes of children in fathers' second families.

We think that the MPF father effects we observed for Norway probably reflect household expenditure patterns and the allocation of goods and time within the household. Norwegian register data, comprehensive as they are, do not enable us to identify the mechanisms behind the association between fathers' MPF and children's educational outcomes. Data on household expenditure patterns or, better yet, on the allocation of goods and time within households might allow us to understand better why children in complex nuclear families experience worse educational outcomes than those in simple nuclear families.

Finally, we consider whether these findings from Norway might generalize to the United States. Previous studies have found striking similarities between the estimated effects of family complexity on children's outcomes in Nordic countries and the United States. Björklund et al. (2007) found that the effect of family complexity on children's educational outcomes was very similar in the United States and Sweden. Heckman and Landersø (2021) and Landersø and Heckman (2017) drew the same conclusion for the United States and Denmark. Breivik and Olweus (2006) found that the negative effect of parental divorce on children's educational outcomes was very similar in the United States and Norway, despite the much more generous social safety net in Norway. Reisel (2011:261) found "more similarities than differences in the relationship between family background and college degree attainment" in the United States and Norway. Grätz et al. (2019) argued that family background characteristics have a universal effect on educational outcomes in Nordic countries, Germany, the United Kingdom, and the United States.

Assessing the importance of selection in most types of complex families is difficult because doing so requires deciphering the roles of selection, family structure transitions, and differences in covariates that represent parental resources (e.g., parental income and education). In blended families and most single-parent families, children experience at least one family structure transition, and these transitions are widely believed to adversely affect children's outcomes (McLanahan et al. 2013). Restricting our attention to a type of complex family in which children do not experience family structure transitions allowed us to demonstrate the importance of selection. We think selection is likely to play a substantial role in all types of complex families, but we decline to speculate about the relative importance of selection compared with family structure transitions in blended families and single-parent families. We suggest, however, that researchers who study outcomes for children in complex families take selection more seriously. ■

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