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Descriptive Finding

Educational outcomes in stepfamilies: A comparative analysis of cohabitation and remarriage

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Educational outcomes in stepfamilies: A comparative analysis of cohabitation and remarriage

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Abstract

BACKGROUND

The motivation for this study is the growing prevalence of cohabitation over remarriage in stepfamily formation. Despite this trend, there is limited research on how cohabitation versus remarriage affects children's educational outcomes. This study examines these differences, focusing on ninth grade educational performance in Denmark.

OBJECTIVE

The study investigates: How do grades differ for children in stepfamilies formed through cohabitation compared to remarriage?

METHODS

Using longitudinal register data from Denmark, the study examines children born between 1986 and 2001. The main outcome is math grades from nationally standardized ninth grade exams. The analysis distinguishes between family structures based on whether parents cohabit or remarry after divorce, with controls for parental education, number of siblings, and relationship duration.

RESULTS

Children from intact nuclear families have the highest math grades. Among children of divorced parents, those whose parents remain single perform better in school than those whose parents enter new relationships. Children in cohabiting stepfamilies fare worse than those in remarried stepfamilies, especially when the mother cohabits. The negative impact of cohabitation persists even when accounting for relationship duration.

CONCLUSIONS

Cohabiting stepfamilies are associated with worse educational outcomes for children compared to remarried stepfamilies, likely due to less household stability and resource

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sharing. The disadvantage is more pronounced on the mother's side and does not improve significantly over time.

CONTRIBUTION

This study fills a research gap by highlighting the educational disparities between children in cohabiting and remarried stepfamilies, offering new insights into the long-term impact of family structure on children's academic performance.

1. Introduction

When parents experience relationship dissolution, they may enter new partnerships through marriage or cohabitation, introducing a stepparent into their child's life. Stepfamily formation can alleviate the financial burden on the single parent by providing additional household resources. However, the resources provided by a stepparent may vary significantly depending on whether the stepfamily is formed through marriage or cohabitation. Cohabiting couples tend to have fewer resources than married couples, often resulting in a smaller share available for their (step)children (Smock et al. 2005). Moreover, cohabiting couples are less likely to pool their resources, meaning that children in cohabiting stepfamilies may not fully benefit from their stepparent's income (Lyngstad, Noack, and Tufté 2010).

The formation of a stepfamily can complicate the family structure for the child by introducing multiple households and new parental figures. This complexity can lead to increased family conflict and instability, both of which negatively impact the child's educational attainment (Hanson, McLanahan, and Thomson, 1996; Gähler and Palmtag 2015). The type of union, whether marriage or cohabitation, also relates to the level of commitment to the partner and stepchild.

Cohabitation, rather than remarriage, has become the primary mode of stepfamily formation for children in post-industrial societies. However, little research has focused on how cohabitation versus remarriage affects children's outcomes. Prior studies have often examined divorce and remarriage, largely overlooking the experiences of children whose parents cohabit after divorce (Ganong and Coleman 2016). This study addresses that gap by using longitudinal register data from Denmark to explore differences in educational outcomes for children in cohabiting versus remarried stepfamilies.

Focusing on math grades, the study examines how family structure affects children's academic performance. Denmark, like other Scandinavian countries, provides an ideal context due to its position as a leader in the Second Demographic Transition. Approximately 1 in 10 children under 17 have at least one parent cohabiting with a non-marital partner (Statistics Denmark 2018). The Danish education system is notable for its

consistency in content and quality across municipalities and school districts. Centralized final examinations in core subjects are mandatory for all ninth grade students, with grading performed by both class teachers and external examiners.

This study makes several important contributions. Using unique, comprehensive, and longitudinal data on parents' relationship status, we can continuously track the marital and cohabiting status of the focal child's biological parents throughout childhood and adolescence. Additionally, by analyzing the socioeconomic and demographic characteristics of parents and their partners, we can accurately capture how parents' relationships influence the child's educational outcomes.

While our primary focus is on differences between cohabiting and remarried stepfamilies, we also situate these within the broader set of post-separation family structures. Including other arrangements, such as single-parent families, provides essential context for interpreting how stepfamilies compare to the full spectrum of children's experiences following parental separation.

2. Data and method

A key aspect of this study is identifying relationships through cohabitation and marriage. Marriages are straightforwardly identified as they are automatically registered, linking spouses' IDs. For cohabiting couples, we obtain specific information about the house or apartment where individuals live, allowing us to identify those in cohabiting households. We follow Statistics Denmark's definition of cohabiting couples as two unrelated individuals of the opposite sex registered at the same address, with an age difference of fewer than 15 years and no other adult registered at that address. This data is unique internationally, as it provides information on cohabitation dating back to 1986.

Our database includes 90% of all children born in Denmark from 1986 onward. We limit our study population to children with Danish-born parents, due to incomplete information on the relationship histories of foreign-born parents. The study population comprises children born between 1986 and 2001, who took their ninth grade final examinations in the year they turned 16, from 2002 to 2017. The final analytic sample consists of 597,813 children. We estimate OLS regression models with standardized math grades as the dependent variable, controlling for child, parental, and contextual covariates. Diagnostics showed no significant violations of linear regression assumptions or problematic multicollinearity.

Various tests are conducted for each subject, yielding a composite average score. We include math grades because they reflect important cognitive abilities. We use standardized grades with a mean of 0 and a standard deviation of 1 for each graduation year.

Our main explanatory variable classifies the family composition to which the focal child is exposed until age 16. For each biological parent, we distinguish between those who (1) remain in a relationship with the other biological parent (at least) throughout the follow-up period, (2) separate or divorce from the other biological parent, (3) separate/divorce and enter a new cohabiting relationship that does not transition into marriage during the follow-up period, or (4) separate/divorce and enter a new relationship that leads to marriage. The last category typically begins with cohabitation, with the transition to marriage occurring before the year the focal child turns 16.

The stepfamily experience may change over time, which is why we distinguish between the duration of the stepfamily's existence. Specifically, we categorize exposures as lasting 0–2, 3–5, 6–9, or 10 or more years by the time the focal child turns 16, also noting whether the re-partnered parent's relationship has transitioned into a marital union.

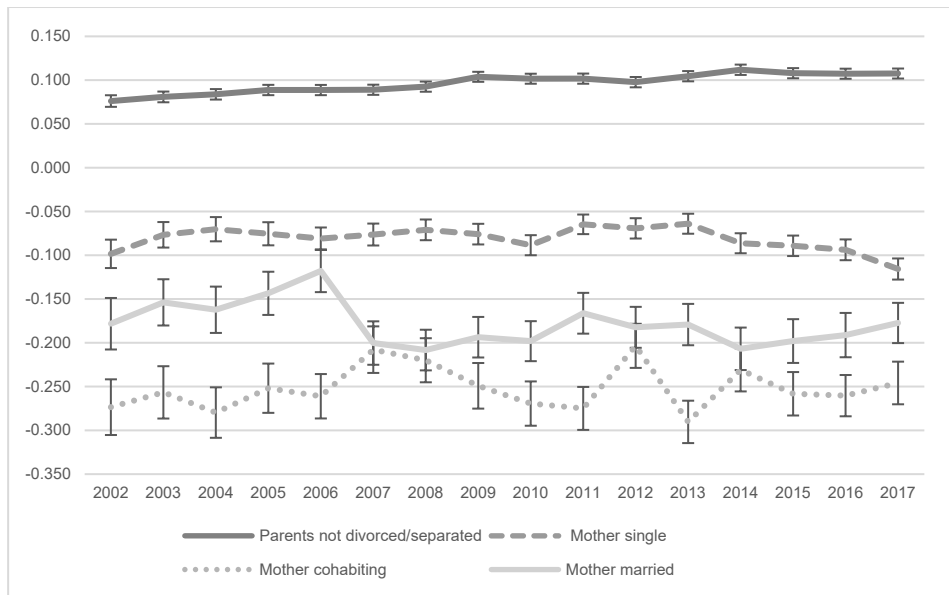
The analysis includes several control variables: the child's sex (male=1, female=0), whether they are the firstborn child of both biological parents (yes=1, no=0), and the number of full siblings (0, 1, 2, 3, or >3), measured during the focal child's ninth year of compulsory school. At the parental level, we control for the mother's age at the time of the focal child's birth and the highest level of education attained by both parents (primary=1, secondary=2, university=3). For children in stepfamilies, the educational attainment of the stepmother and/or stepfather is measured similarly. We also control for the presence of stepsiblings or half-siblings on both sides and age at parental divorce, and include region fixed effects. Table 1 presents the means for the variables included in the analysis.

Table 1: Descriptive statistics

Family status, mother:		Sex	
Mother not divorced/separated	73.06	Male	50.34
Mother divorced/separated – not re-partnered	18.21	Female	49.66
Mother re-partnered cohabitation	4.17	Mother's age at birth	29.76
Mother remarried	4.55	Full siblings	
Family status, father		0	9.34
Father not divorced/separated	73.06	1	53.47
Father divorced/separated – not re-partnered	17.90	2	29.06
Father re-partnered cohabitation	4.21	>3	8.14
Father remarried	4.83	Stepfather exposure	
Mother's education		No stepfather	91.27
Mother primary	13.17	0–2 years	2.72
Mother secondary	45.38	3–5 years	2.35
Mother university	41.45	6–9 years	2.49
Father's education		10 plus years	1.17
Father primary	16.29	Stepmother exposure	
Father secondary	51.15	No stepmother	90.96
Father university	32.56	0–2 years	2.96
Stepparents' education (if any)		3–5 years	2.42
Stepmother primary	21.75	6–9 years	2.46
Stepmother secondary	52.65	10 plus years	1.20
Stepmother university	25.60	Year of exam	2009.2
Stepfather primary	17.53	Any halfsiblings (mother)	2.42
Stepfather secondary	46.20	Any stepsiblings (mother)	5.11
Stepfather university	36.27	Any halfsiblings (father)	2.59
First-born	44.61	Any stepsiblings (father)	5.65
Observations			597,813

Figure 1 shows the differences in standardized grade averages between various family types (maternal stepfamilies) and confirms that the biological parents of children in intact families at age 16 have, on average, higher educational attainment than those experiencing parental relationship dissolution, amounting to between 10% and 20% of a standard deviation higher math grade compared to other relationship types on the mother's side. A child's math performance is significantly better when the mother remains single than when she enters a new relationship, especially a cohabiting one.

Figure 1: Standardized grade averages in math of different student groups-based on the type of family formation (Mother)



3. Educational outcomes of children in different (step)family types

Table 2 shows the baseline associations between family type and math grades. The estimates displayed are interaction terms between mothers' and fathers' new union status. The results confirm that children in intact nuclear families have the most favorable school outcomes, as demonstrated consistently. Children who experience parental separation or divorce but whose parents remain single throughout the duration of the follow-up period experience better school outcomes than if either or both biological parents enter into a new relationship. Whereas a child whose parents separate or divorce and remain single experiences an 11.1% standard deviation lower grade in math, the corresponding disadvantage if both parents enter into cohabiting relationships is a full 8 percentage points greater.

Table 2: OLS regression, test scores for children in maternal/paternal stepfamilies

Mathematics					
	Mother	No divorce (ref.)	Single	Cohabiting	Married
Father	No divorce	Ref.	N/A	N/A	N/A
	Single	N/A	-0.111 (-0.120 – -0.101)	-0.199 (-0.218 – -0.180)	-0.151 (-0.170 – -0.133)
	Cohabiting	N/A	-0.172 (-0.191 – -0.154)	-0.194 (-0.219 – -0.169)	-0.142 (-0.167 – -0.118)
	Married	N/A	-0.157 (-0.175 – -0.139)	-0.170 (-0.202 – -0.153)	-0.125 (-0.145 – -0.106)
Observations					597,813

Note: Full estimates and control variables displayed in Table A-1, online Appendix. Models control for mother's age at birth, the number of siblings (categorical), parental education, if the child is the first born to biological parents, sex of the child, age at divorce. Region fixed effects. Robust 95% confidence intervals in parentheses.

Holding the father's single status constant, exposure to stepfamily formation through the mother varies by almost 6 percentage points, depending on whether it occurs through cohabitation (-19.4% of a standard deviation) or remarriage (-14.2%), aligning with the expectation that stepfather exposure through cohabitation is linked to greater disadvantage. Albeit not as accentuated, a similar pattern emerges when the mother remains single, depending on whether the father cohabits (-17.2%) or remarries (-15.7%). The differences in the type of stepfamily exposure are consistently greater on the mother's side, while keeping the father's relationship status constant.

As previously outlined, a potential explanation of why stepfamilies formed through marriage are associated with more favorable outcomes than those formed through cohabitation is that the former are characterized by greater commitment and stability. Since marital unions typically last longer than cohabiting relationships, it is possible that some of the advantage experienced by children with remarried parents is a function of a greater relationship duration. We therefore also examine whether children in cohabiting stepfamilies face a grade penalty that exists net of relationship duration.

Due to multicollinearity and the undesirable model complexity that arises from including relationship durations for both the mother's and father's sides simultaneously, as well as the difficulty in interpreting the resulting large set of interactions, we choose a more straightforward specification. We examine the association between stepfamily duration and the child's educational outcomes separately for the mother's and father's sides. Table 3 displays the results from two models, arranged in columns, allowing for a comparison of the consequence of stepfamily exposure through cohabitation at 0–2, 3–5, 6–9, and 10+ years of duration against exposure through marriage at similar durations. Comparing stepfamilies through cohabitation across durations, the results indicate only a marginal improvement in the child's predicted outcome as cohabitation duration

increases. For instance, when comparing two children in their final year of compulsory school, one with a stepfather through cohabitation for less than 3 years and the other for more than 10 years, the difference in the predicted outcomes is only about 1.2 percentage points of a standard deviation and not statistically significantly different from each other. Turning to stepfamilies formed through remarriage, it is notable that its consequences are nearly indistinguishable from cohabitation at 0–2 years of duration, amounting to –20.8% and –19.7% of a standard deviation, respectively. By contrast, stepfamily formation through remarriage shows gradually improving child educational outcomes as duration increases, with 10 years or more associated with a 9.6% of a standard-deviation-lower predicted final exam grade.

Table 3: OLS regression, test scores in mathematics for children in maternal/paternal stepfamilies. Relationship duration

	Grade in mathematics	
	Mother	Father
No separation/divorce	ref	ref
Parent single	–0.125 (–0.134 – –0.116)	–0.124 (–0.133 – –0.116)
<i>Cohabitation</i>		
0–2 years	–0.208 (–0.227 – –0.188)	–0.183 (–0.201 – –0.164)
3–5 years	–0.184 (–0.207 – –0.160)	–0.154 (–0.178 – –0.131)
6–9 years	–0.174 (–0.202 – –0.146)	–0.157 (–0.186 – –0.128)
10+ years	–0.196 (–0.247 – –0.146)	–0.180 (–0.233 – –0.127)
<i>Remarriage</i>		
0–2 years	–0.197 (–0.228 – –0.166)	–0.182 (–0.211 – –0.154)
3–5 years	–0.157 (–0.180 – –0.134)	–0.133 (–0.155 – –0.110)
6–9 years	–0.132 (–0.151 – –0.113)	–0.159 (–0.178 – –0.140)
10+ years	–0.0960 (–0.121 – –0.0708)	–0.132 (–0.157 – –0.108)
Observations	597,813	597,813

Note: Full estimates and control variables displayed in Table A-2, online Appendix. Models control for mother's age at birth, the number of siblings (categorical), parental education, if the child is first born to biological parents, sex of the child, age at divorce. Region Fixed Effects. 95% confidence intervals in parentheses

Previous research has shown a growing acceptance of stepparents by stepchildren over time, which leads to decreasing conflict within the stepfamily (Ganong et al. 2011),

translating into better educational outcomes. Our findings suggest that, in the short run, stepfamily formation through both marriage and cohabitation is associated with substantial adversity in the child's school performance, indicating the existence of considerable adjustment issues regardless of whether the relationship has been formalized through marriage. In the longer run, however, a considerably more pronounced decrease in adversity is observed among children with married stepparents, possibly indicating that this family type promotes greater financial and emotional commitment, as well as a greater willingness of the child to accept their stepparent into the family system.

4. Conclusion

Cohabitation without marriage has become the most common long-term relationship type among adults in Scandinavia. This trend may have significant repercussions for children, as cohabiting relationships are generally more volatile than marital unions. Furthermore, even among previously married individuals, subsequent relationships are less likely to transition into marriage, suggesting that many stepfamilies exist solely through cohabitation. Thus, our understanding of stepfamilies may be incomplete or misleading if based solely on experiences from marriages. Despite the prevalence of stepfamilies formed through cohabitation, very little empirical research has been conducted on how this experience affects children and how it differs from stepfamily formation through marriage.

This study has a number of limitations that should be mentioned. First, our data lack information on family processes such as dyadic relationship quality, parental involvement, and coparenting, as well as indicators of child well-being such as stress, mental health, and behavioral adjustment. These processes are closely intertwined with family structure and may represent key mechanisms shaping children's educational outcomes. Our findings should therefore be understood as associations between family structure and academic performance, not as evidence that structure alone explains the observed differences.

Our data and approach allow us to identify associations rather than causal relationships, yet the use of longitudinal registers remains a key strength because it enables us to distinguish between exposure to stepfamilies formed through cohabitation and remarriage. The data also make it possible to trace the timing of these relationships, including cohabitations that later transition into marriage. At the same time, we recognize that selection effects may influence our results since it is difficult to fully account for adult characteristics associated with both relationship stability and child outcomes. Although our models include a wide range of covariates, unmeasured factors remain, and

the findings should therefore be interpreted as descriptive patterns rather than causal effects.

It is important to acknowledge that our study, like much prior research, adopts a deficit-comparison framework by using intact, first-time married nuclear families as the reference group. This approach has been criticized for implicitly framing non-nuclear families as deviations from a normative ideal (Jensen and Sanner 2021). While we maintain this strategy for comparability with earlier work, we see our results as complementary to a normative-adaptive perspective and believe our data provides a solid basis for future research that explores variability within family types.

A further limitation is that our data only allow us to identify opposite-sex couples. As a result, same-sex stepfamilies are not captured in our analyses. Although such families represent a relatively small share of all stepfamilies in Denmark, their exclusion limits the generalizability of our findings to all family forms.

The consistency of our results nevertheless offers important insights into how children's school performance is affected differently by stepfamily formation through cohabitation and marriage. We show that, holding other factors constant, grades in math are lower for children in stepfamilies compared to other family types. We further show that children in stepfamilies through marriage are better off in terms of grades compared to children whose parent(s) only enter into cohabitation. The findings also indicate consistently larger differences between a cohabiting and a married stepparent on the mother's side, potentially attributed to the exposure to stepparents typically being greater through the mother, due to her normally being the main custodial parent.

Recognizing that marital unions typically have a longer duration than cohabiting relationships, we examined whether the challenges faced by children in stepfamilies formed through cohabitation are present regardless of how long these relationships last. Our findings indicate that in the short term, stepfamily formation, whether through marriage or cohabitation, tends to correlate with significant difficulties in children's school performance. This points to considerable adjustment challenges that occur regardless of the relationship's formal status. However, over time, children with married stepparents show a marked reduction in these difficulties compared to their peers in cohabiting stepfamilies. This study has shown important differences in child educational outcomes depending on the family structure (cohabitation/marriage) post-divorce of the biological parents. Future research should add to this literature by studying other child outcomes likely affected by parental post-divorce family structure, such as the child's own family formation, divorce, and stepfamily formation.

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