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The Long-Term Effect of Childhood Poverty

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Abstract

This paper uses variation among siblings to identify the effect of childhood poverty on long-term outcomes such as income, earnings, job type, employment, and having children. Childhood poverty is found to have large negative effects on labour market outcome and small effects on non-labour market outcomes. The marginal effect of one additional year of childhood poverty from the age of 13 to 15 is found to decrease the disposable income of the individual by 6.4% around the age of 30. The effect size is found to have an inverse u-shape in the age of the child, peaking in the early teens, but with a notable spike at the year of birth. The effect is not found to be accentuated by other shocks to the household, such as divorce, parental job loss, or relocation. Yet, a social gradient is detected, where children from low educated parents are harmed more than others.

JEL classification: D31; I32; J13

Keywords: Poverty; Child development; Family background; Siblings; Intergenerational mobility

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1 Introduction

In western countries childhood poverty is a sizable, persistent, and controversial feature of the modern economy. In 2012 on average across OECD countries around 13% of children were reported as living in income poverty[1]. Based on such observations a growing literature has been concerned with understanding the potential consequences of childhood poverty.

In recent years the literature has turned from a focus on the intergenerational income correlation to causal studies of the effect of parental income on child outcomes. The shift in the literature has however come at the cost that researchers primarily focus on short- and medium-term outcomes such as child behavior and educational attainment. This paper exploit the longitude of the Danish registers to extend the literature by providing a causal study of the long-term consequences of childhood poverty. By doing so, this study links the literature on intergenerational correlations to the literature on causal income effects. This paper additionally adds to the literature by not only studying the overall long-term effect of childhood poverty but also allowing the effect to vary by the age of the child where the parents were economically deprived.

The effect of childhood poverty is identified by using within-family variation among siblings on the experience of childhood poverty and by relying on a rich set of within family controls. This is done in order to control for other, often unobservable, parental and environment factors. The potential difference in the number of years in childhood poverty between siblings will allow for identification of the marginal effect of one additional year in childhood poverty. Age differences among siblings and the timing of parental poverty will allow for identification of heterogeneous age effects of childhood poverty.

I find significant negative long-term effects of childhood poverty. One additional year in childhood poverty from the age of 13 to 15 decreases the disposable income of the individual by 6.4% around the age of 30. Interestingly, the effect size seems to have an inverse u-shape in the age of the child, peaking in the early teens, but with a notable

[1] see http://www.oecd.org/social/income-distribution-database.htm

spike at the year of birth.

Similar results are found for other outcomes such as earnings, years of schooling, the probability of having a high-end job, and the probability of being poor. On the other hand the effect of childhood poverty is found to be less severe when looking into labour market attachment and non labour market outcomes such as marriage and having children.

The effect is not found to be accentuated by other simultaneous shocks to the household such as parental divorce, job loss, or relocation. Furthermore the effect does not seem to be driven by a potential intergenerational transferal of public transfer dependence. It is however the case that the size of the effect has a social gradient such that children with low educated parents are harmed more by childhood poverty than children with high educated parents.

In this paper I use a relative poverty measure to identify the families where children are socioeconomically deprived. The focus on the effect of poverty is chosen on account of previous empirical literature finding very large effects for children growing up in low income families on educational attainment (Dahl and Lochner (2012) and Løken et al. (2012)). Similar the intergenerational income correlation is found to be very high at the bottom of the income distribution. An individual is defined as experiencing childhood poverty at a given age if the disposable income of the parents is below 50% of the median income of the full population of Danes in the given year.

The effect of childhood poverty found in this paper can be thought of as capturing the lack of ability of the parents to invest resources in the development of the child through supportive parenting practices. This prediction is based on human capital theory and emphasizes the parents lack of ability to purchase materials, experiences, and services to build human capital. Arguments for this theory can be found in Becker and Tomes (1986), Haveman and Wolfe (1994), and Mayer (1997). In Heckman (2008) it is accentuated that this type of effect can go through the credit constraint of both the parents and the child's inability to borrow against future outcomes. However psychological distress of the parents

due to their economic hardship might also be part of the effect[2].

The empirical literature attempting to causally estimate the link between the income of the parents and short- and medium-term outcomes of the child finds that parental income has an effect on educational attainment of the child both in terms of school grades and in terms of duration of schooling (Duncan et al. (2011), Dahl and Lochner (2012), and Levy and Duncan (2000)). Milligan and Stabile (2011) and Løken et al. (2012) also find impacts on mental and physical health as well as the IQ of the child. U.S. studies (Duncan et. al (1998), Levy and Duncan (2000)) find that parental income seem to matter more at the earlier ages of the child while Northern European studies (Humlum (2011) and Jenkins and Schluter (2002)) find that the impact is largest when the child is in its teens.

This study distinguish itself from this line of literature by specifically focusing on childhood poverty and by exploiting the longitude and richness of the Danish data registers to estimate the effect on long-term outcomes such as income, earnings, employment, job type, and marriage. The effect is allowed to vary by the age of the child.

The paper proceeds as follows. In the next section, I describe the data, the sample selection, and the definition of childhood poverty. The strategy for estimating the effect of childhood poverty is described in Section 3. Section 4 presents results. Section 5 shows robustness checks, and Section 6 concludes.

2 Data

This paper takes advantage of the comprehensive Danish full population administrative data. The longitude and the richness of this data source is one of the major strengths of the paper. In this section I describe the data source, sample selection, descriptive statistics, and how this data source is used to construct a measure of childhood poverty.

[2]For instance, Milligan and Stable (2011) and Evans and Garthwaite (2014) find that income transfer programmes can improve the emotional well-being of a family.

2.1 Data source

This paper uses the Integrated Database for Labour Market Research (IDA) provided by Statistic Denmark. IDA is a matched employer-employee longitudinal database including yearly socioeconomic information on all Danes. The version used in this paper consists of information from the period 1980 to 2011. In general, the annual IDA measurements refer to the last week of November in each year. From the database I use information on biological families to establish links between individuals, parents, and siblings.

I extract the disposable income of the individual from the database. This is the main outcome measure in the regression and is used to define childhood poverty. The disposable income measure consists of individual income such as wages, transfers, and interest excluding taxes. It is designed by Statistics Denmark such that it mirrors the available income for consumption and savings for the individual.

I also extract the following set of socioeconomic information: gender, age, employment, gross income, earnings, type and duration of schooling, accumulated labour market experience, family type, number of children, municipality of residence, birth weight and length, and individual job type. Family type include marriage, being single, and cohabitation, and job type is used to disentangle regular work from self employment, high-end job[3].

2.2 Sample selection

The data sample used in the estimations is constructed by including all pairs of siblings where both are born between 1980 and 1983. In order to abstract from the issue of the parental choice of family size, only two-child families will be considered (Bagger et al. (2013)). It is required that the mother can be observed from birth to the age of 21.

[3]The measure of annual earnings is the sum of all labour market income including fringe benefits and stock options reported to the tax authorities. The measure of gross annual income includes all income during the year before taxes.

Parental information from birth to the age of 21 is used to define childhood poverty[4]. It is further required that the siblings can be observed in all years from 2008 to 2011, where the outcome variables are measured. The small group of individuals who are still in school in 2008 is excluded from the sample.

The sample is constructed in this manner in order to be able to have yearly observations of childhood poverty from birth to the age of 21 as well as outcomes when the individuals are around the age of 30. The sample includes 126,989 observations on 32,357 individuals and their parents[5].

2.3 Measuring childhood poverty

In this paper the measure of childhood poverty is based on the disposable income of the parents in a given year. The disposable income of the parents is made comparable across household structures by using an equivalence scale. The OECD-modified scale is applied. The scale assigns a value of 1 to single households without children, a value of 0.5 for each additional adults and a value of 0.3 for each additional child in the household. By using an equivalence scale, marriage is allowed to be an insurance against individual poverty and allows for public goods in the household.

Based on this measure of parental disposable income the childhood poverty measure is defined as a relative measure for all Danes of ages between 18 and 55. A person is defined as experiencing childhood poverty at a given age if the disposable income of the parents is below 50% of the median income of the full population of Danes ages 18 to 55 in the given year. The advantage of this measure is its simplicity and that it follows the income dynamics of the rest of the country. This makes it easy to interpret the results from the model and to avoid any politically loaded arguments on the selection of poverty[6].

Since the poverty of students represent a distinct type of poverty which is not the

[4]Using age cutoffs at 14, 18, or 25 yields similar results.

[5]Table 9 in Appendix A shows the number of observations excluded from the sample in each selection step.

[6]Section 5 shows result where other poverty measures are used.

focus of this paper, students falling below the poverty threshold will not be considered as poor.

Figure B in Appendix B shows the percent of the sample experiencing childhood poverty at a given age using the definition described above. From the figure it can be seen that the percent experiencing childhood poverty is rather stable at around 6.5% of the sample from birth to around the age of 7, but then decreases as the parents become older and stabilises at around 2.5% when the child turns 18.

2.4 Descriptive statistics

Descriptive statistics on the sample of individuals can be found in Table 1 and Table 2. Table 1 shows information on the individuals, and Table 2 shows information on their parents. Both Table 1 and Table 2 are split into three columns. The first column presents information on all individuals, the second column presents information on individuals who never experience childhood poverty, and the third column presents information on individuals who experience at least one year of childhood poverty. From the last row of the tables show that about 25% of the individuals in the sample experience poverty at least one year during their childhood. By comparing the second and third column in Table 1, it can be seen that individuals who experience poverty at least once during their childhood have on average a lower income in terms of disposable income, gross income, and earnings. They also have a lower employment level, less accumulated labour market experience, and shorter educations. Additionally, a higher fraction of them are observed as being poor in year 2011, and they are less likely to live in the metropolitan district of the capital.

Table 2 shows results on parental characteristics. Individuals who experience poverty at least once during childhood have slightly older parents with shorter educations. They grow up in households with lower disposable incomes, and their parents are more likely to be immigrants.

Overall, these numbers suggest that individuals who experience childhood poverty are

Table 1: Descriptive statistics of individual characteristics in 2011.

	All	Never experienced childhood poverty	Experienced childhood poverty at least once
Disposable income†	26,472.53	26,687.16	25,880.86
Gross income†	38,758.02	38,970.40	38,172.54
Earnings†	32,734.58	33,354.57	31,025.42
Women	0.51	0.51	0.52
Age	29.54	29.53	29.57
Employment rate	0.83	0.84	0.80
labour market experience	6.06	6.10	5.95
high-end job	0.28	0.29	0.24
Self-employed	0.03	0.03	0.04
Regular worker	0.51	0.51	0.52
Poor (50% of median income)	0.08	0.07	0.10
Married	0.30	0.30	0.32
Have children	0.45	0.45	0.46
Birth weight (kg)	3.38	3.37	3.38
Birth lenght (m)	0.52	0.52	0.52
Residence in or close to Copenhagen	0.27	0.28	0.24
Years of education	14.46	14.56	14.17
Education:			
Low	0.25	0.24	0.28
Medium	0.57	0.57	0.56
High	0.17	0.19	0.14
Number of individuals	32,357	23,744	8,613
Number of observations	126,989	93,076	33,913

Notes: The first column shows means statistics for the entire sample, the second column shows statistics for those who never experienced childhood poverty, and the third column shows statistics for those who experienced poverty at least for one year during childhood. All statistics are measured in 2011. † reported in Euros in 2010 prices. The level of education is split into the three groups: low, medium, and high, such that the low education group contains basic education including elementary school and high school, the medium educational group contains vocational educations and undergraduates, and the high educational group consists of graduates students.

doing worse than others in terms of labour market outcomes. They also suggest that their parents were doing worse. Whether the difference in the labour market outcomes of

Table 2: Descriptive statistics of parental characteristics.

	All	Never experienced childhood poverty	Experienced childhood poverty at least once
Age of father at birth	29.44	29.24	29.98
Age of mother at birth	26.33	26.28	26.47
At least one immigrant parent	0.07	0.06	0.12
Parents cohabiting at birth	0.96	0.97	0.94
Father in a UI-fund†	0.71	0.76	0.56
Disposable income in household††	18,477.80	19,896.54	14,566.65
Educational group of father†:			
Low	0.37	0.34	0.45
Medium	0.56	0.58	0.49
High	0.07	0.08	0.05
Educational group of mother†:			
Low	0.41	0.38	0.49
Medium	0.55	0.59	0.49
High	0.03	0.04	0.02
Number of individuals	32,357	23,744	8,613
Number of observations	126,989	93,076	33,913

Notes: The first column shows means statistics for the entire sample, the second column shows statistics for those who never experienced childhood poverty, and the third column shows statistics for those who experienced poverty at least for one year during childhood. † measured in 2011. †† in year 1991 in Euros measured in 2010 prices.

the individuals can be attributed to the experience of childhood poverty or whether it is purely due to selection is the main question attempted answered in the later sections of this paper[7].

[7]In the sample it is found that the sibling income correlation is 0.43, which is in line with the literature (Solon (1999), Black et al. (2010)). In terms of the identification strategy described in the next section, one might be concerned that the older siblings experienced substantially more childhood poverty than younger siblings. This is only the case for 55% of the sibling pairs. It thus raises no concern.

3 Empirical method

The effect of childhood poverty on labour market outcomes is estimated by exploiting the variation between siblings in the timing of experience of childhood poverty to take out between-family variation and by relying on a rich set of controls to take out irrelevant within-family variation.

The difference in sibling ages when experiencing childhood poverty will allow for the identification of the effect of childhood poverty at a certain age. Here the experience of parental poverty at a younger or older age will be used as the control group. I intent to assess the effect of childhood poverty experienced from birth to the age of 21. Thus, parental poverty before birth or after the age of 21 is used as control group[8].

The empirical strategy relies on family fixed effects. Using a family fixed effect method can potentially cause problems related to low power in the estimations and as a result large standard errors (Bagger et al. (2013), Black et al. (2005), Black et al. (2011), and Booth et al. (2009)). In order to obtain more precision, I choose to pool the experience of childhood poverty into age bins. The chosen age bins are; the year of birth, ages 1 to 3, 4 to 6, 7 to 9, 10 to 12, 13 to 15, 16 to 18, and 19 to 21. Each age bin represents the accumulated number of years in childhood poverty within the given age interval. The identified effect is the marginal effect of one additional year in childhood poverty within a given age interval.

The model is estimated by a linear regression with family fixed effects and controls to capture any unintended variation within the sibling pairs. The family fixed effects are allowed to vary by year as outcome variables are included for each year from 2008 to 2011[9]. The estimated model can be described as in equation (1) below.

[8]Cutoffs at ages 14, 18, and 25 were implemented with similar results. The implications of this choice of control group is discussed in Section 5.2.

[9]The outcome years are treated as separate cross-sections by allowing for separate fixed effects for each outcome year. This assumption is preferred since it is less restrictive than the alternative of pooling the cross-sections and taking out only one family fixed effect. However estimations without allowing for year variation in the fixed effects delivers similar results.

$$y_{it} = \delta_1 X_i + \delta_2 Z_i + \sum_{j=0}^{7} \beta_j P_{ij} + \gamma_{ft} + \varepsilon_i, \tag{1}$$

where y is the relevant labour market outcome, X represents a set of within-family controls, Z are time-varying within-family controls, γ is the family-year fixed effect, ε is an iid error term, and P is the number of years in childhood poverty within a given age interval.

The estimates of β_i for $i \in [0, 7]$ are the main objects of interest in this paper. These represent the marginal effects of one additional year in childhood poverty within a given age interval. The control group is individuals with poor parents before birth or after the age of 21.

The set of controls X is included to take out irrelevant within-family variation. The controls are selected on the basis of the literature using within-family fixed effect methods (Behrman and Taubman (1986), Blake (1989), Black et al. (2005), and Breining (2014)). The controls include age dummies, a gender indicator, parental age dummies, birth order, interaction between siblings, gender and birth order, and dummy variables for length at birth. Birth weight is included as a linear variable and as dummy variables for each kilo interval starting from 1.5 kilos, in order to capture non-linearity of low weight children.

The set of controls Z is include in order to take out within-family variation caused by shocks to the family besides poverty. These controls are whether the mother moved place of residence, whether the father lost his job, whether the biological father moved away from the biological mother, and family structure. Here family structure is split into three groups; biological parents live together, biological mother lives with a new partner, and biological mother lives without a partner. All controls are included separately by age of the child. Some of these controls can be thought of as potentially capturing part of the non-monetary effect of childhood poverty. Thus, including them can potentially bias the estimate of the effect of childhood poverty downwards. Because of this concern the model was estimated without these controls in order to shed some light on their impact on the main results.

Relying on the variation between siblings in the timing of the experience of childhood poverty to identify the effect of childhood poverty is a effective way to take out irrelevant variation in the data. It however comes at the cost of having to use individuals with parents who are poor before birth and after the cutoff age of 21 as control group. It might be the case that this control group is affected by the parental poverty as well as the individual who experience childhood poverty. For this reason the estimates of the marginal effect of childhood poverty found in this paper should be thought of as lower bounds of the effect.

4 Results

In this section I present the results of the paper. The first part shows the main results on the long-term effect of childhood poverty on a range of outcomes, and the second part looks into the potential causes and implications through which childhood poverty might affect labour market outcomes.

4.1 The effect of childhood poverty

Table 3 presents the results on the marginal effect of one additional year of childhood poverty on the disposable income of an individual at a given age.

The results from the full version of the model can be found in the third column of the table. These results show that the experience of childhood poverty has a significant negative impact on the disposable income of an individual. The effect is sizable such that one additional year of childhood poverty experienced between the age of birth and the age of 21 has a negative impact on the disposable income of the individual of 2.2%. The effect of childhood poverty is further decomposed by splitting the effect by age of the child. From this exercise I arrive at the interesting result that effect of childhood poverty is largest when the child is in his/her early teens and peaks in the age interval from age 13 to 15. In this period one additional year of childhood poverty has a negative effect of 5.9%

Table 3: The effect of childhood poverty by age on the disposable income of the individual.

	Log disposable income		Log disposable income		Log disposable income	
	Coeff.	S.E	Coeff.	S.E	Coeff.	S.E
No. of years in childhood poverty:						
Birth year ($\hat{\beta}_0$)	-0.000	(0.007)	-0.038**	(0.013)	-0.038**	(0.013)
Ages 1 to 3 ($\hat{\beta}_1$)	-0.008**	(0.003)	-0.014*	(0.008)	-0.010	(0.008)
Ages 4 to 6 ($\hat{\beta}_2$)	0.010**	(0.003)	-0.018*	(0.010)	-0.017*	(0.010)
Ages 7 to 9 ($\hat{\beta}_3$)	-0.004	(0.003)	-0.026**	(0.011)	-0.024**	(0.011)
Ages 10 to 12 ($\hat{\beta}_4$)	0.008**	(0.004)	-0.023*	(0.012)	-0.019	(0.012)
Ages 13 to 15 ($\hat{\beta}_5$)	-0.015**	(0.004)	-0.064**	(0.013)	-0.064**	(0.013)
Ages 16 to 18 ($\hat{\beta}_6$)	-0.006	(0.005)	-0.023	(0.014)	-0.020	(0.014)
Ages 19 to 21 ($\hat{\beta}_7$)	-0.003	(0.005)	-0.026**	(0.011)	-0.025**	(0.011)
Ages 0 to 21†	-0.002**	(0.001)	-0.024**	(0.006)	-0.022**	(0.006)
Within family controls (X)	Yes		Yes		Yes	
Time varying controls (Z)	No		No		Yes	
Family fixed effect (γ)	No		Yes		Yes	
N	126,989		126,989		126,989	

Notes: ** indicate significance at 5% and * at 10%. Within-family clustered standard errors in parentheses. The disposable income is measure in 2010 prices. † estimates from separate regressions. X includes age dummies, a gender indicator, parental age dummies, birth order, interaction between sibling gender and birth order, and dummy variables for birth length. Birth weight is included as a linear variable and with dummy variables for each kilo interval starting from 1.5 kilos in order to capture non-linearity of low weight children. Z includes indicator by age of the child of whether the mother moved place of residence, whether the father lost his job, whether the biological father moved away from the biological mother, and family structure. Here family structure is split into three groups; biological parents live together, biological mother lives with a new partner, and biological mother lives without a partner.

on the disposable income of the individual as adult. The effect size is found to be inverse u-shaped in the age of the child, with a notable spike at the year of birth. Interestingly these timing effects are different from those found in Duncan et. al (1998) and Levy and Duncan (2000) for the U.S., where it is found that family income matters most in the early years for the educational achievement of the child. The difference in institutional settings and levels of income inequality between Denmark and the U.S. however makes this cross county comparison difficult.

The table includes results from three types of regressions. The first column only includes the within-family controls X. The second column shows results where the family fixed effect is added, and the third column shows results including time changing within family controls Z. Comparing across these three regressions illustrates that the inclusion of the family fixed effect changes the estimates significantly. This gives confidence that the empirical model takes out an important part of the irrelevant variation in the data. Including the time varying controls Z seems to have very little impact on the relevant estimates.

4.1.1 The effect on other outcomes

Figure 1, 2 and 3 show results on a series of other long-term outcomes[10]. These outcomes are: log earnings, log gross income, accumulated labour market experience, years of schooling, in a high-end job, married, having a child, unemployment, part-time employment, being poor, and being rich[11]. The results on these outcomes can be used to validate the main results on the disposable income described in the previous section. However, they may also be used to gain more insight on the impacts of childhood poverty.

Comparing the results on the two income measures, log earnings, and log gross income, with the results in the previous section on log disposable income illustrate that the effect of childhood poverty is larger in earnings than when using the two other income measures. This indicates that the large effect on earning of childhood poverty of up to 12.4% at ages 13 to 15 is somewhat reduced by taxes and public transfers.

If the individual experience childhood poverty the probability of being poor is higher and the probability of being rich is lower. These results indicates an intergenerational

[10]The results can also be found in Table 10 and 11 in Appendix C.

[11]A high-end job is defined using information on the job description and includes high-end white-collar workers and regular workers with large salaries. An individual is defined as being poor if the disposable income of the individual is below 50% of the median income of the full population of Danes ages 18 to 55 in a given year. An individual is defined as being rich if the disposable income of the individual is above 150% of the median income of the full population of Danes ages 18 to 55 in a given year.

poverty trap.

The two outcome measures, years of schooling and whether the individual is in a high-end job, can be used to achieve more insights on the impact of childhood poverty on the labour market career of the individual. These estimates reveal that the impact of childhood poverty on years of schooling is of about 2 months less schooling and 3% lower probability of being in a high-end job for one additional year in childhood poverty. The impact is again largest if childhood poverty was experienced during the teens.

The figures also show results on accumulated labour market experience, the probability of being unemployed, and in part-time employment. The results on these outcome variables establish that individuals who experience childhood poverty enter the labour market earlier but have a similar labour market attachment as the controls. The results on the non-labour market outcomes of marriage and having children are less strong than the results on the labour market outcomes. These results indicate a slight tendency of individuals experiencing childhood poverty during their teens to be less likely to be married and less likely to have children around the age of 30.

From the results in this section I arrive at the conclusion that childhood poverty has a significant long-term impact on an individual. Childhood poverty affects years of schooling, career opportunities, and earnings. The effect is slightly reduced by taxes and public transfers but is still sizable when considering the disposable income of an individual. The size of the effect has an inverse u-shape in the age of the child. It affects the child most in early teens, but parental poverty at the year of birth also has a considerable impact.

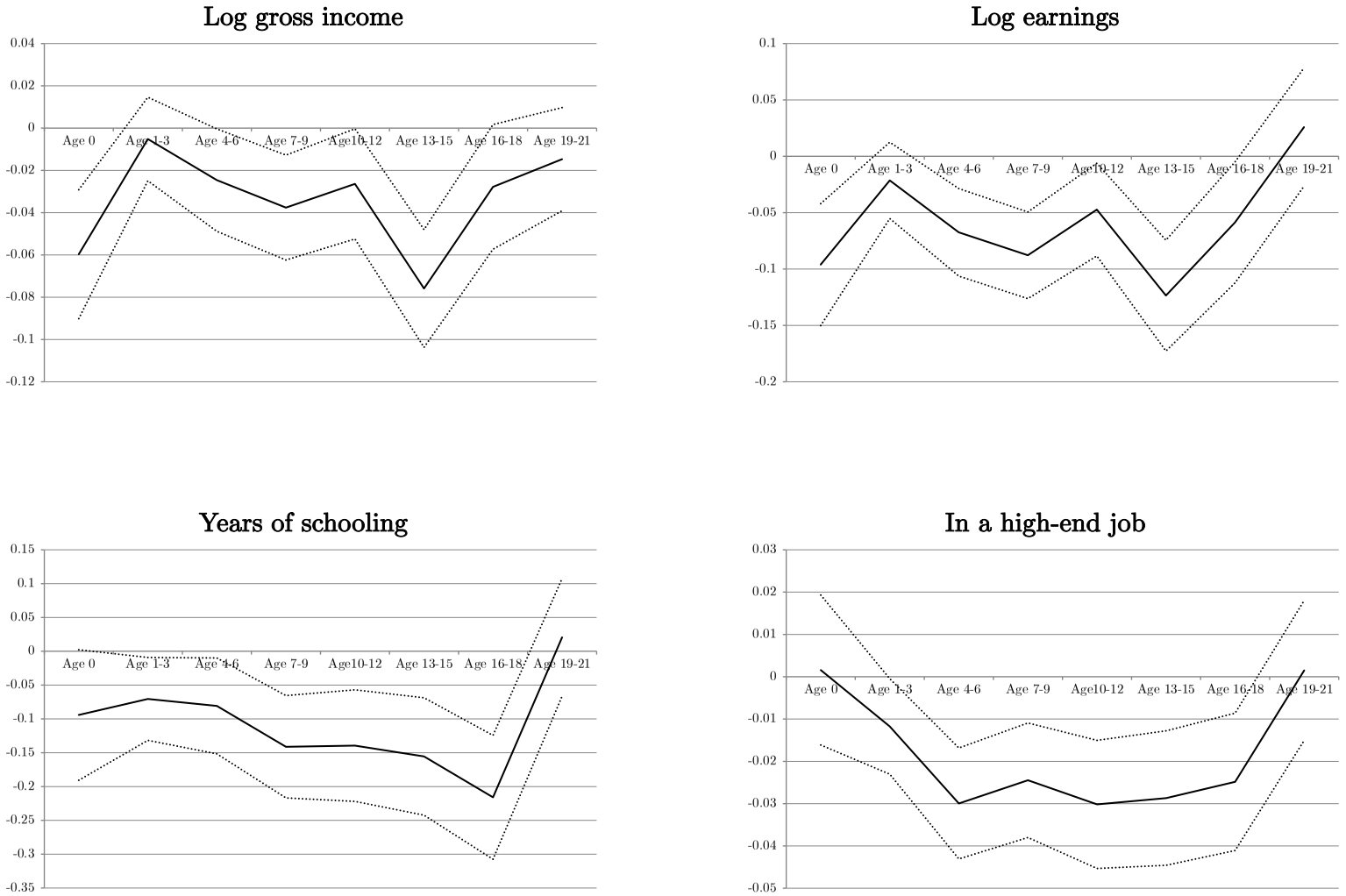

Figure 1: The effect of childhood poverty by the age of the child on a series of adult outcomes. The solid line is the mean, and the dotted lines are 95% confidence intervals. See also Table 10 in Appendix C.

Figure 2: The effect of childhood poverty by the age of the child on a series of adult outcomes. The solid line is the mean, and the dotted lines are 95% confidence intervals. See also Table 10 in Appendix C.

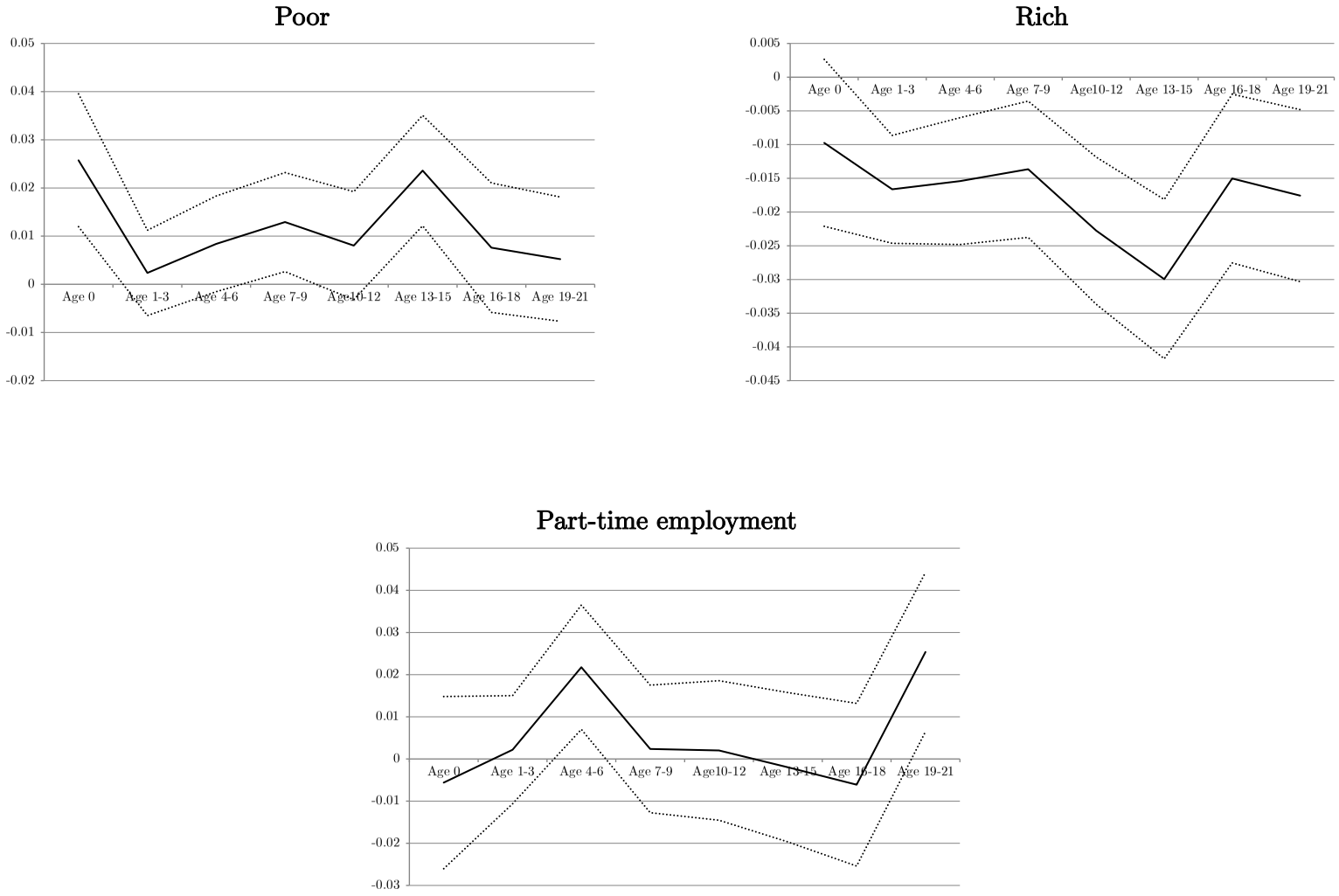

Figure 3: The effect of childhood poverty by the age of the child on a series of adult outcomes. The solid line is the mean, and the dotted lines are 95% confidence intervals. See also Table 10 in Appendix C.

4.2 Causes and implications

The results in the previous section show that childhood poverty has a negative long-term effect on an individual. The circumstances through which the parents become poor are investigated in this section. This is done because the circumstances might be important for the interpretation of the results. Children from high and low educated parents might be affected differently by childhood poverty, and childhood poverty in relation to a shock to the family, such as a divorce or parental job loss, might be different for poverty in families more permanently on public transfers. This section looks into circumstances involving shocks to the family, the potential existence of welfare traps, differences across social classes, and differences across neighborhoods in order to get a better understanding of the causes and implications of childhood poverty.

4.2.1 Shocks to the family

Shocks to the family such as parental divorce, parents moving, or a father losing his job can potentially have long-term effects on the child. Negative shocks like these might have an effect on the parents non-monetary capacity to actively participate in the development of the child. They might affect the parents by lower well-being, depression, poor health, and less interaction with the child (R.D. Coger and Elder (1994), Elder and Caspi (1988), and McLoyd (1990)).

The purpose of this section is not to identify the long-term effects of these shocks. It is however to look into the impact of the experience of childhood poverty simultaneously to these potential causes and implications of childhood poverty. In this paper the three indicators parental divorce, parents moving, and a father losing his job are proposed to give insights on the role of parent's psychological distress in relation to their economic hardship. The base model described in Section 3 already controlled for such shocks by including the time varying controls labelled Z. This section uses the same empirical strategy, but it includes an indicator of whether the shock to the household happened in a year where the child experienced childhood poverty.

Table 4: The impact of other shocks to the family on the effect of childhood poverty by age.

	No. of years in childhood poverty in the same year as:					
	Mother moves		Father losses his job		Parents divorce	
	Log disposable income		Log disposable income		Log disposable income	
	Coeff.	S.E	Coeff.	S.E	Coeff.	S.E
Ages 1 to 3	0.024	(0.028)	-0.037	(0.047)	0.238**	(0.088)
Ages 4 to 6	0.005	(0.037)	0.068	(0.057)	0.236**	(0.087)
Ages 7 to 9	-0.020	(0.044)	0.013	(0.062)	0.187**	(0.086)
Ages 10 to 12	0.012	(0.050)	0.122*	(0.066)	0.298**	(0.088)
Ages 13 to 15	-0.023	(0.063)	-0.046	(0.074)	0.055	(0.086)
Ages 16 to 18	0.030	(0.052)	-0.094	(0.064)	0.009	(0.065)
Ages 19 to 21	0.082**	(0.037)	0.001	(0.059)	0.133**	(0.052)
Within family controls (X)	Yes		Yes		Yes	
Time varying controls (Z)	Yes		Yes		Yes	
Family fixed effect (γ)	Yes		Yes		Yes	
N	126,989		126,989		126,989	

Notes: ** indicate significance at 5% and * at 10%. Within-family clustered standard errors in parentheses. X and Z are defined as in the main specification. See Section 3 or the note to Table 3.

The results in Table 3 establish that including controls for the shocks of parental divorce, parental relocation, and job loss of the father has very little impact on the estimates on the effect of childhood poverty. Table 4 shows results on the interaction between childhood poverty at a given age and these shocks to the family. From the table it can be seen that the experience of the shocks job loss of the father and parental relocation in the same year as the parents become poor does not seem to have a major additional impact. While these shocks in them self might have severe impacts on the child, the impacts of these do not seem to accentuate the effect of childhood poverty. On the other hand childhood poverty becomes less important when the child experiences parental divorce in the same year.

The results in this section suggest that shocks to the family which potentially can cause psychological distress to the parents do not seem to be a major driver behind the

negative effect of childhood poverty found in this paper.

4.2.2 Welfare trap

The results in Moffitt (1983), Solon et al. (1988), Gottschalk (1990), and Antel (1992) suggest that the experience of growing up in a family dependent on government transfers will decrease the stigma associated with receiving social transfers for the child later in life. This effect is then suggested to spill over into lower educational ambitions and work ethics.

This paper looks into the possible existence of a welfare trap and its potential impact on the effect of childhood poverty in two ways.

Table 5: The impact of the father being outside the labour market on the probability of the individual being outside the labour market by the age of the child.

	Outside the labour market†		Outside the labour market		Outside the labour market	
	Coeff.	S.E	Coeff.	S.E	Coeff.	S.E
No. of years of the father being outside the labour market:						
Birth year	0.059**	(0.008)	-0.016	(0.016)	-0.023	(0.018)
Ages 1 to 3	0.022**	(0.003)	0.007	(0.009)	-0.012	(0.013)
Ages 4 to 6	0.010**	(0.003)	0.010	(0.008)	0.004	(0.012)
Ages 7 to 9	0.007**	(0.003)	-0.001	(0.007)	0.008	(0.010)
Ages 10 to 12	0.014**	(0.003)	0.009	(0.007)	-0.002	(0.010)
Ages 13 to 15	0.015**	(0.003)	0.001	(0.007)	-0.005	(0.010)
Ages 16 to 18	0.003	(0.003)	0.024**	(0.007)	0.059**	(0.010)
Ages 19 to 21	0.008**	(0.002)	-0.005	(0.006)	-0.019*	(0.010)
Within family controls (X)	Yes		Yes		Yes	
Time varying controls (Z)	No		No		Yes	
Family fixed effect (γ)	No		Yes		Yes	
N	126,989		126,989		126,989	

Notes: ** indicate significance at 5% and * at 10%. Within-family clustered standard errors in parentheses. † outside the labour market is defined as not being employed or receiving UI-benefits. X and Z are defined as in the main specification. See Section 3 or the note to Table 3.

The first method uses an indicator of whether an individual is outside the labour

market[12] as outcome measure and looks at the impact of the father being outside the labour market during the childhood of the individual as a control. This is done in order to detect a welfare trap. Here a positive correlation will be seen as an indication of a welfare trap.

Results from this exercise can be found in Table 5. The first column of the table show results without family fixed effects. The second and the third columns show results where family fixed effects and time varying controls are included. The results in the first column clearly show a positive intergenerational correlation in the tendency to be outside the labour market. This is in line with the existence of a welfare traps. The results in the second and third column show that this positive correlation disappears once the family fixed effects are included. So there seems to be no evidence of a welfare trap but some evidence of intergenerational correlations in labour market attachment.

The second method is based on the baseline regression described in Section 3, but it includes controls for whether the father is outside the labour market at a given age of the child and interaction terms between childhood poverty and father outside the labour market at a given age. If a welfare trap could be detected, then the estimates on these interaction terms would show whether the welfare trap had an impact on the effect of childhood poverty. As expected from the results in Table 5, the results in Table 12 in Appendix D show very little evidence of a welfare trap affecting the results on the effect of childhood poverty.

Thus, the results in this section imply no evidence of a welfare trap and very little impact of parental welfare recipiency on the effect of childhood poverty.

4.2.3 Network and social class of the parents

The effect of childhood poverty might differ across the social classes of the parents. Higher educated parents might be able to compensate for the lack of income by borrowing money or by relying on their network. On the other hand the social stigma of poverty can

[12]Outside the labour market is defined as non-employed and not receiving UI-benefits.

potentially be larger for higher educated parents. This could affect the child through the psychological distress of the parents. Similar arguments can be made for parents from expensive neighborhoods[13].

Table 6 shows results on the the effect of childhood poverty conditioning of the educational level of each of the parents and results on the effect of childhood poverty when controlling for the municipality of birth. The second and the third columns of Table 6 show results on the variation of the effect of childhood poverty across educational levels of the parents. These results reveal that the effect decreases in the educational level of the parents. Especially in the educational level of the father. This result is in line with the idea that the effect of childhood poverty is more severe when the parents have a hard time compensating for the loss of income.

The first column of Table 6 shows results on the effect of childhood poverty when the municipality of birth is included as a control. By comparing these results with the baseline results in Table 3, it can be seen that the municipality of residence at the age of birth does not seem to make a difference to the estimates[14].

The results in this section suggest that the effect of childhood poverty does not differ across municipalities. The results on the heterogeneity in the effect of childhood poverty across the educational levels of the parents suggest that children from parents with less social capital are harmed more from childhood poverty than others.

[13]See Aaronson (1998), Case and Katz (1991), Galster et al. (2008), and Galster (2012).

[14]Clearly most of the variation in the data across municipalities is captured by the family fixed effect. Thus this result is in it self perhaps less surprising.

Table 6: Heterogeneity in the effect of childhood poverty by the length of parental education and the importance of the municipality of birth.

			Interaction with:			
	Municipality of birth		Education of father		Education of mother	
	Log disposable income		Log disposable income		Log disposable income	
	Coeff.	S.E	Coeff.	S.E	Coeff.	S.E
No. of years in childhood poverty (a):						
Birth year	-0.041**	(0.013)	-0.060**	(0.021)	-0.022	(0.018)
Ages 1 to 3	-0.006	(0.008)	-0.006	(0.012)	-0.009	(0.010)
Ages 4 to 6	-0.018*	(0.010)	-0.013	(0.016)	-0.007	(0.012)
Ages 7 to 9	-0.025**	(0.011)	-0.021	(0.018)	-0.037**	(0.014)
Ages 10 to 12	-0.018	(0.012)	-0.025	(0.021)	-0.022	(0.018)
Ages 13 to 15	-0.067**	(0.013)	-0.090**	(0.021)	-0.078**	(0.018)
Ages 16 to 18	-0.021	(0.014)	-0.059**	(0.022)	-0.054**	(0.020)
Ages 19 to 21	-0.025**	(0.011)	-0.040**	(0.015)	-0.023*	(0.014)
Parent medium education interaction with (a):						
Birth year			0.046*	(0.025)	-0.033	(0.025)
Ages 1 to 3			-0.006	(0.013)	0.001	(0.012)
Ages 4 to 6			-0.010	(0.017)	-0.022*	(0.013)
Ages 7 to 9			-0.010	(0.018)	0.022	(0.013)
Ages 10 to 12			0.003	(0.021)	0.009	(0.018)
Ages 13 to 15			0.043*	(0.023)	0.025	(0.021)
Ages 16 to 18			0.076**	(0.025)	0.079**	(0.023)
Ages 19 to 21			0.036*	(0.020)	0.004	(0.020)
Parent High education interaction with (a):						
Birth year			-0.107	(0.115)	0.020	(0.086)
Ages 1 to 3			0.016	(0.041)	-0.058	(0.046)
Ages 4 to 6			0.050	(0.047)	0.045	(0.042)
Ages 7 to 9			0.055	(0.055)	0.056	(0.041)
Ages 10 to 12			0.104*	(0.059)	-0.041	(0.047)
Ages 13 to 15			0.066	(0.048)	0.051	(0.059)
Ages 16 to 18			0.049	(0.068)	0.008	(0.079)
Ages 19 to 21			0.096	(0.062)	-0.173	(0.132)
Municipality of birth	Yes		No		No	
Within family controls (X)	Yes		Yes		Yes	
Time varying controls (Z)	Yes		Yes		Yes	
Family fixed effect (γ)	Yes		Yes		Yes	
N	126,989		126,989		126,989	

Notes: ** indicate significance at 5% and * at 10%. Within family clustered standard errors in parentheses. X and Z are defined as in the main specification. See Section 3 or the note to Table 3.

5 Robustness

The results in this paper rely on the definition of parental poverty and on the family fixed effect strategy. This section shows evidence on the robustness of the results when the definition of parental poverty is changed. This is done by estimating the model using various poverty thresholds and by taking the potential importance of persistent poverty into account. Secondly, the validity of the empirical strategy is investigated by taking a closer look at the choice of control group.

5.1 Different poverty measures

An individual is defined to experience childhood poverty at a given age if the disposable income of the parents is below 50% of the median income in the full population of Danes ages 18 to 55. Choosing a threshold in this manner has the advantage of making the results clear and easy to interpret without having to rely on normative arguments. Ultimately the choice comes down to choosing a threshold. This paper follow the tradition of choosing a cutoff at 50% of the median income, but there is no objective argument as to why the cutoff should not be at a lower or a higher level.

To overcome this difficulty I choose to present results using thresholds at 20%, 30%, 40%, 60%, and at 70%. The results from this exercise can be found in Table 7. In the table it can be seen that results are stable across poverty thresholds, but with a tendency to smaller effects for the thresholds 60% and 70%. The choice of threshold will affect the size of the estimate, but the interpretation of the overall message on the long-term of effect childhood poverty is unaffected. The result gives confidence in the main conclusions of the paper. The stability of the estimate sizes across poverty thresholds can be seen as a product of the small variation in income at the lower end of the income distribution in Denmark due to the Danish social security system.

It might be argued that it is the experience of persistent poverty which carries the main long-term effect of poverty. A household experiencing temporary poverty might be able to borrow money from friends and family, but this will not be a possibility when

experiencing persistent poverty. A counter argument is that a household moving from a year of non-poverty to a year of poverty might be more strongly psychologically affected than a family experiencing its second year of poverty.

The results in this paper are on the marginal effect of one additional year of childhood poverty and not concerned with the persistence of childhood poverty. In order to gain some insight on the persistence, I estimate models using restricted poverty measures. It is required that the child experienced poverty in at least two out of three years or four out of six years. Using these restrictive definitions of childhood poverty and still relying on family fixed effects in the estimations raises the concern of lack of variation in the data. For this reason, the results from these estimations should only be thought of as suggestive. The results from the estimations can be found in Table 13 in Appendix E. Even when using these persistent poverty measures, childhood poverty has a negative long-term effect on the disposable income of an individual.

Based on the considerations and results in this section, the choice of a poverty measure of 50% of the median income in a given year seems to be reasonable in providing evidence on the effect of childhood poverty, and the results in this paper are shown to be robust to variations of this measure.

Table 7: The effect of childhood poverty by the age of the child using other poverty thresholds.

Poverty measure:	20%		30%		40%		60%		70%	
	Log disposable income		Log disposable income		Log disposable income		Log disposable income		Log disposable income	
	Coeff.	S.E	Coeff.	S.E	Coeff.	S.E	Coeff.	S.E	Coeff.	S.E
No. of years in childhood poverty:										
Birth year	-0.013	(0.018)	-0.017	(0.017)	-0.027*	(0.016)	-0.007	(0.011)	0.014	(0.009)
Ages 1 to 3	-0.011	(0.011)	-0.002	(0.011)	-0.015	(0.010)	-0.009	(0.007)	-0.006	(0.005)
Ages 4 to 6	-0.011	(0.017)	-0.026*	(0.014)	-0.026**	(0.011)	-0.012	(0.007)	0.001	(0.006)
Ages 7 to 9	-0.027	(0.019)	-0.034**	(0.016)	-0.041**	(0.012)	-0.017**	(0.008)	-0.012**	(0.006)
Ages 10 to 12	0.031	(0.028)	0.016	(0.025)	-0.027*	(0.016)	-0.025**	(0.009)	-0.023**	(0.007)
Ages 13 to 15	-0.055**	(0.028)	-0.067**	(0.026)	-0.070**	(0.019)	-0.059**	(0.009)	-0.036**	(0.007)
Ages 16 to 18	-0.027	(0.028)	-0.034	(0.024)	-0.029	(0.019)	-0.026**	(0.010)	-0.030**	(0.007)
Ages 19 to 21	-0.059**	(0.016)	-0.064**	(0.015)	-0.053**	(0.014)	-0.011	(0.010)	-0.033**	(0.008)
Ages 0 to 21	-0.024**	(0.008)	-0.025**	(0.008)	-0.030**	(0.007)	-0.016**	(0.005)	-0.015**	(0.004)
Within family controls (X)	Yes		Yes		Yes		Yes		Yes	
Time varying controls (Z)	Yes		Yes		Yes		Yes		Yes	
Family fixed effect (γ)	Yes		Yes		Yes		Yes		Yes	
N	126,989		126,989		126,989		126,989		126,989	

Notes: ** indicate significance at 5% and * at 10%. Within-family clustered standard errors in parentheses. X and Z are defined as in the main specification. See Section 3 or the note to Table 3.

5.2 Heterogeneous effects

In this section I look into the variation in the results across gender and birth order. The variation across both of these gives additional information on the nature of the effect of childhood poverty. Variation of the effects across birth order can in addition be used to get a better understanding of the importance of choice of the control group.

The empirical strategy in this paper relies on variation between siblings in the age of the experience of childhood poverty to identify the effect. This means that the control group for the older sibling is the parents being poor before the birth of the younger sibling and the control group of the younger sibling is based on the parents being poor after the older sibling turns 21. As previously mentioned in Section 3, the cutoffs at ages 14, 18, and 25 were tried as alternatives to the cutoff age of 21. This had no significant impact on the conclusions of the paper. Another concern is that the control group for the older sibling is fundamentally different than the control group of the younger. This is the case if parental poverty matters more when the individual is above the age of 21 than before birth. As discussed in Section 3, merging the two control groups and assuming no impact of childhood poverty for these group can potentially downward bias the estimates. By showing the effects separately for the older and younger sibling, I am able to address this potential concern.

The results by gender and birth order can be found in Table 8. The first column shows results when allowing the effect of childhood poverty to vary across gender. The second column shows result when varying the effect across birth order.

The second column shows no major variation in the effect across birth order. The significant negative estimates on birth order interacted with number of year in childhood poverty at ages 4 to 6 and at ages 18 to 21 could be interpreted as a slight tendency of the measured effect to be larger for the older sibling. This would be an implication if the impact of parental poverty when the individual is above the age of 21 is larger than the impact before the individual is born. However, the positive estimate at ages 13 to 15 points in the opposite direction. The size of these results raises no concern on the validity

Table 8: The effect of childhood poverty by gender and birth order.

Interaction with:	Gender (women)		Birth order (older)	
	Log disposable income		Log disposable income	
	Coeff.	S.E	Coeff.	S.E
No. of years in childhood poverty (a):				
Birth year	-0.068**	(0.016)	-0.064**	(0.020)
Ages 1 to 3	0.001	(0.008)	-0.021	(0.015)
Ages 4 to 6	-0.021*	(0.011)	0.007	(0.019)
Ages 7 to 9	-0.025**	(0.012)	0.001	(0.021)
Ages 10 to 12	-0.010	(0.015)	0.023	(0.023)
Ages 13 to 15	-0.064**	(0.015)	-0.067**	(0.025)
Ages 16 to 18	-0.030**	(0.015)	-0.042	(0.025)
Ages 19 to 21	-0.024*	(0.013)	-0.020*	(0.011)
Gender or birth order interacted with (a):				
Birth year	0.060**	(0.020)	0.033	(0.022)
Ages 1 to 3	-0.023**	(0.009)	-0.006	(0.011)
Ages 4 to 6	0.007	(0.009)	-0.032**	(0.011)
Ages 7 to 9	0.001	(0.010)	0.003	(0.012)
Ages 10 to 12	-0.016	(0.014)	-0.017	(0.013)
Ages 13 to 15	-0.001	(0.014)	0.039**	(0.017)
Ages 16 to 18	0.020	(0.014)	0.009	(0.018)
Ages 19 to 21	-0.003	(0.014)	-0.037**	(0.018)
No. of years in childhood poverty (a):				
Ages 0 to 21	-0.022**	(0.006)	-0.015**	(0.006)
Gender or birth order interacted with (a):				
Ages 0 to 21	-0.000	(0.002)	-0.004**	(0.001)
Within family controls (X)	Yes		Yes	
Time varying controls (Z)	Yes		Yes	
Family fixed effect (γ)	Yes		Yes	
N	126,989		126,989	

Notes: ** indicate significance at 5% and * at 10%. Within family clustered standard errors in parentheses. X and Z are defined as in the main specification. See Section 3 or the note to Table 3.

of main conclusions in the paper.

The results in the first column of Table 8 on the variation across gender show that the

effect of childhood poverty is homogeneous in gender except for ages below 3. In the birth year the effect of childhood poverty seems to be slightly worse for men than for women. The opposite seems to be the case at ages 1 to 3.

The results in this section raise no concern on the generality of the conclusions of the paper, and the use of control group does not seem have a major undesired impact on the results.

6 Concluding remarks

In this paper, I have examined the effect of childhood poverty on long-term outcomes of the individual using within-family variation and a rich set of controls in order to account for other, often unobservable, parental and environment factors. Consistent with the recent literature on the effect of parental income on short- and medium-term outcomes, I find that childhood poverty has a significant effect on long-term outcomes such as disposable income. This result is in line with those of intergenerational correlation studies and can be seen as linking the causal studies on parental income effects to the intergenerational correlation literature.

In particular I find that the marginal effect of one additional year in childhood poverty from the age of 13 to 15 decreases the disposable income of the individual by 6.4% around the age of 30. Similar effects are found using outcomes such as earnings, years of schooling, and the probability of having a high-end job. The identification strategy allows me to extend the literature further by showing heterogeneous effects of childhood poverty by age of the child. The effect size is found to have an inverse u-shape in the age of the child, peaking in the early teens, but with a notable spike at the year of birth.

If a policy maker seeks to improve equality of opportunity, this paper and the related literature provide arguments for individuals experiencing childhood poverty to be the relevant treatment group. In Holzer et. al (2008) it is argued that the total cost for society in terms of foregone earnings, crime, and health costs from individuals experiencing

childhood poverty can be sizable. This paper provides causal evidence for this argument.

The results in this paper is evidence of a negative intergenerational impacts of the economic conditions in the household for the less fortunate families. the obvious next step is to look more closely into the mechanism behind this income effect. The results on the social gradient with the largest effects for children with low educated parent and the lack of impact of other simultaneous shocks such as parental job loss or relocation can be used as a starting point for such a study. While the results in this paper establish a causal relation, future work in the area is needed in order to get an understanding of the complex patters through which childhood poverty affects adult outcomes.

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A Appendix

Table 9: Sample selection

Description	Number of observations	Number of individuals
All children born i Denmark from 1980 to 1983:	860,680	239,871
Information available for all years from 2008 to 2011:	826,915	212,626
Information on the mother:	795,371	200,105
Only two child families where both are born		
in the period from 1980 to 1983:	135,232	33,810
Excluding individuals still in school in 2008:	126,989	32,357

B Appendix

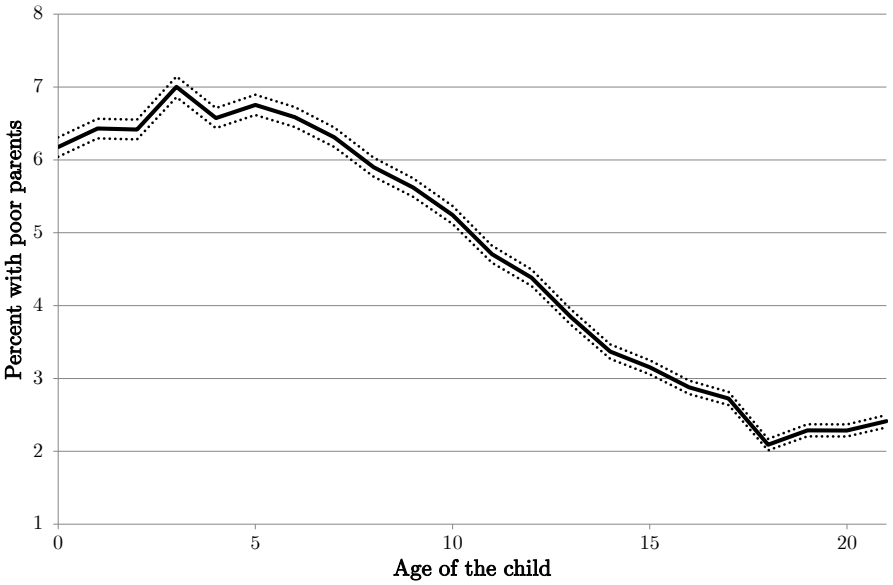

Figure 4: Percent of children experiencing childhood poverty in a given year by age of the child. Mean and 95% confidence intervals are presented in the figure.

C Appendix

Table 10: The effect of childhood poverty by the age of the child on a series of adult outcomes. Part 1.

	Log earnings		Log gross income		Labour market experience		Years of schooling		In a high-end job		Married	
	Coeff.	S.E	Coeff.	S.E	Coeff.	S.E	Coeff.	S.E	Coeff.	S.E	Coeff.	S.E
No. of years in childhood poverty:												
Birth year	-0.096**	(0.028)	-0.060**	(0.016)	-0.092	(0.065)	-0.094*	(0.049)	0.002	(0.009)	0.034**	(0.010)
Ages 1 to 3	-0.021	(0.017)	-0.005	(0.010)	0.183**	(0.043)	-0.070**	(0.031)	-0.012**	(0.006)	0.005	(0.007)
Ages 4 to 6	-0.067**	(0.020)	-0.025**	(0.012)	0.071	(0.051)	-0.081**	(0.036)	-0.030**	(0.007)	-0.007	(0.008)
Ages 7 to 9	-0.088**	(0.020)	-0.038**	(0.013)	0.130**	(0.054)	-0.141**	(0.039)	-0.024**	(0.007)	0.008	(0.008)
Ages 10 to 12	-0.047**	(0.021)	-0.026**	(0.013)	0.180**	(0.057)	-0.139**	(0.042)	-0.030**	(0.008)	-0.006	(0.009)
Ages 13 to 15	-0.124**	(0.025)	-0.076**	(0.014)	0.111*	(0.063)	-0.156**	(0.044)	-0.029**	(0.008)	-0.027**	(0.009)
Ages 16 to 18	-0.059**	(0.027)	-0.028*	(0.015)	0.265**	(0.069)	-0.216**	(0.047)	-0.025**	(0.008)	-0.015	(0.010)
Ages 19 to 21	0.026	(0.027)	-0.015	(0.012)	0.153**	(0.065)	0.021	(0.044)	0.001	(0.008)	-0.005	(0.010)
Ages 0 to 21†	-0.043**	(0.013)	-0.025**	(0.008)	0.128**	(0.034)	-0.081**	(0.024)	-0.014**	(0.004)	0.002	(0.005)
Controls (X)	Yes		Yes		Yes		Yes		Yes		Yes	
Controls (Z)	Yes		Yes		Yes		Yes		Yes		Yes	
Family fixed effect (γ)	Yes		Yes		Yes		Yes		Yes		Yes	
N	113,330		126,989		126,989		126,989		126,989		126,989	

Notes: ** indicate significance at 5% and * at 10%. Within-family clustered standard errors in parentheses. X and Z are defined as in the main specification. See Section 3 or the note to Table 3. † estimates from separate regressions. A high-end job is defined using information on the job description and includes high-end white-collar workers and regular workers with large salaries.

Table 11: The effect of childhood poverty by the age of the child on a series of adult outcomes. Part 2.

	Poor		Rich		Part-time employment		Have child		Unemployed	
	Coeff.	S.E	Coeff.	S.E	Coeff.	S.E	Coeff.	S.E	Coeff.	S.E
No. of years in childhood poverty:										
Birth year	0.026**	(0.007)	-0.010	(0.006)	-0.006	(0.010)	0.033**	(0.012)	0.016*	(0.009)
Ages 1 to 3	0.002	(0.005)	-0.017**	(0.004)	0.002	(0.007)	0.016**	(0.007)	-0.015**	(0.006)
Ages 4 to 6	0.008*	(0.005)	-0.015**	(0.005)	0.022**	(0.008)	-0.000	(0.008)	-0.011*	(0.006)
Ages 7 to 9	0.013**	(0.005)	-0.014**	(0.005)	0.002	(0.008)	-0.002	(0.009)	0.002	(0.007)
Ages 10 to 12	0.008	(0.006)	-0.023**	(0.006)	0.002	(0.008)	-0.007	(0.009)	-0.006	(0.007)
Ages 13 to 15	0.024**	(0.006)	-0.030**	(0.006)	-0.002	(0.009)	-0.061**	(0.010)	0.022**	(0.008)
Ages 16 to 18	0.008	(0.007)	-0.015**	(0.006)	-0.006	(0.010)	-0.027**	(0.011)	0.009	(0.009)
Ages 19 to 21	0.005	(0.007)	-0.018**	(0.007)	0.025**	(0.010)	-0.023**	(0.011)	-0.017*	(0.009)
Ages 0 to 21†	0.009**	(0.003)	-0.016**	(0.003)	0.007	(0.005)	-0.001	(0.006)	-0.006	(0.004)
Controls (X)	Yes		Yes		Yes		Yes		Yes	
Controls (Z)	Yes		Yes		Yes		Yes		Yes	
Family fixed effect (γ)	Yes		Yes		Yes		Yes		Yes	
N	126,989		126,989		126,989		126,989		126,989	

Notes: ** indicate significance at 5% and * at 10%. Within-family clustered standard errors in parentheses. X and Z are defined as in the main specification. See Section 3 or the note to Table 3. † estimates from separate regressions. An individual is defined as being poor if the disposable income of the individual is below 50% of the median income of the full population of Danes ages 18 to 55 in a given year. An individual is defined as being rich if the disposable income of the individual is above 150% of the median income of the full population of Danes ages 18 to 55 in a given year.

D Appendix

Table 12: The impact of the father being outside the labour market on the effect of childhood poverty on the disposable income by the age of the child.

	Log disposable income		Log disposable income		Log disposable income	
	Coeff.	S.E	Coeff.	S.E	Coeff.	S.E
No. of years of the father being outside the labour market and the individual experiencing childhood poverty†:						
Birth year	-0.027	(0.023)	0.134**	(0.054)	0.133**	(0.055)
Ages 1 to 3	-0.004	(0.010)	0.004	(0.027)	0.000	(0.027)
Ages 4 to 6	0.015*	(0.009)	0.031	(0.030)	0.030	(0.030)
Ages 7 to 9	-0.018**	(0.009)	-0.022	(0.031)	-0.009	(0.031)
Ages 10 to 12	0.028**	(0.009)	0.088**	(0.037)	0.091**	(0.036)
Ages 13 to 15	0.007	(0.010)	-0.000	(0.032)	0.002	(0.032)
Ages 16 to 18	-0.016	(0.011)	0.009	(0.030)	0.017	(0.030)
Ages 19 to 21	-0.008	(0.013)	0.064**	(0.025)	0.067**	(0.026)
Within family controls (X)	Yes		Yes		Yes	
Time varying controls (Z)	No		No		Yes	
Family fixed effect (γ)	No		Yes		Yes	
N	126,989		126,989		126,989	

Notes: ** indicate significance at 5% and * at 10%. Within-family clustered standard errors in parentheses. † outside the labour market is defined as not being employed or receiving UI-benefits. X and Z are defined as in the main specification. See Section 3 or the note to Table 3.

E Appendix

Table 13: The effect of childhood poverty using measures of persistent poverty.

	Log disposable income		Log disposable income	
	Coeff.	S.E	Coeff.	S.E
At least 2 out of 3 years in childhood poverty:				
Birth year	-0.028**	(0.013)		
Ages 1 to 3	0.011	(0.015)		
Ages 4 to 6	-0.014	(0.016)		
Ages 7 to 9	-0.002	(0.019)		
Ages 10 to 12	0.003	(0.017)		
Ages 13 to 15	-0.113**	(0.025)		
Ages 16 to 18	0.034	(0.030)		
Ages 19 to 21	0.002	(0.022)		
At least 4 out of 6 years in childhood poverty:				
Birth year			-0.028**	(0.013)
Ages 1 to 6			0.002	(0.013)
Ages 7 to 12			0.009	(0.015)
Ages 13 to 18			-0.055**	(0.022)
Ages 19 to 21			-0.013	(0.021)
Within family controls (X)	Yes		Yes	
Time varying controls (Z)	Yes		Yes	
Family fixed effect (γ)	Yes		Yes	
N	126,989		126,989	

Notes: ** indicate significance at 5% and * at 10%. Within-family clustered standard errors in parentheses. X and Z are defined as in the main specification. See Section 3 or the note to Table 3.

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