



Intergenerational Predictors of Poverty in the UK and EU

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Paper Prepared for the IARIW 33rd General Conference

Rotterdam, the Netherlands, August 24-30, 2014

Session 2C

Time: Monday, August 25, Afternoon

INTERGENERATIONAL PREDICTORS OF POVERTY IN THE UK AND EU¹

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Previous research has shown that children who grow up in socio-economic disadvantage are more likely to experience income poverty and other related problems when they themselves are adults and parents, in turn affecting subsequent generations (see e.g. d'Addio, 2007 for a review). Better understanding the factors associated with future life chances is therefore a key priority for policy makers working to break this intergenerational cycle of poverty.

This paper adds to the evidence base available for policy makers by using EU Statistics on Income and Living Conditions (EU-SILC) data to analyse the predictors of poverty, material deprivation and other aspects of well-being. In 2011, it included a module on the intergenerational transmission of disadvantage. A series of variables were collected of adults aged 25-59, relating to their circumstances when they were aged 14. These variables covered various aspects of the household composition; their parents' education level, economic status and country of birth/citizenship; and the economic situation of the household.

This paper presents multivariate analysis conducted to analyse the extent to which such childhood factors might be associated with future life chances, examining their relationship with educational attainment, as well as future income poverty and material disadvantage. Analysis is presented both for the UK and other EU countries in order to examine the extent to which intergenerational transmission of disadvantage varies across different welfare regimes.

¹ Paper prepared for the 33rd General Conference of the International Association for Research in Income and Wealth (IARIW), Rotterdam, the Netherlands, August 24-30, 2014. The UK Office for National Statistics bears no responsibility for the analyses and conclusions, which are solely those of the authors.

1. INTRODUCTION

In recent years there has been considerable research into the degree to which children born into poor families grow up to become poor adults. There is a growing body of evidence that this intergenerational transmission of poverty risk is an issue to varying degrees in a number of countries in the EU and around the world (see for example Corak, 2006; Bird, 2007; Jenkins & Siedler, 2007a).

In 2010, the European Union published the Europe 2020 strategy, which stated a number of headline targets to achieve by 2020; among these was the target to reduce the number of people across the EU at risk of poverty or social exclusion by 20 million. In the UK, the Government are committed to ending child poverty. The Child Poverty Act (2010) sets out 4 separate child poverty targets to be met by 2020/21. If risk of poverty is being transmitted from one generation to the next, policies designed to reduce child poverty and to break the intergenerational cycle are critical to the achievement of this EU target. As well as reducing poverty, improving intergenerational mobility has a number of benefits of interest to policymakers; it has been argued that greater equality of opportunity could reduce the need for welfare support, encourage greater social cohesion and make use of the potential of all individuals, increasing economic efficiency (d'Addio, 2007).

1.1 Predictors of intergenerational transmission of disadvantage

Education is consistently identified as the key mechanism explaining intergenerational income mobility, with the majority of childhood factors associated with the intergenerational transmission of poverty mainly operating by affecting the child's educational outcomes (see D'Addio, 2007 and HM Government, 2014 for a fuller discussion of the evidence). Low parental qualifications drive poverty because of their impact on employment opportunities and wage potential (see literature review by Smith & Middleton, 2007).

As well as having a strong association with current experiences of poverty, the level of parental qualifications has also been proposed as an important factor in the intergenerational transmission of poverty (Blanden & Gibbons, 2006; d'Addio, 2007). In the UK, evidence suggests that parental qualifications are more important to future outcomes than income and social class (Field, 2010). When considering the adult generation, an individual's level of education is generally the main predictor of their poverty status. Individuals with higher qualifications tend to have higher earnings and are less likely to be unemployed and there is evidence of a correlation between educational attainment and income. Across the EU as a whole, an adult with poor qualifications is more likely to be in poverty than one that is highly educated (Grundiza & Lopez Vilaplana, 2013). Parental education is generally viewed as the most important predictor of a child's educational outcomes (Ermisch & Pronzato, 2010; HM Government, 2014) affecting the likelihood of a child being well-educated in a number of ways; more educated parents are more likely to educate their children, are better able to help their children with education and have higher aspirations for them (Bird, 2007).

Despite it being a UK Government priority to narrow the attainment gap associated with economic disadvantage, it remains significant. In 2012/13 38.7% of pupils eligible for free school meals achieved an A*-C grade in English and Mathematics GCSEs, compared with 65.3% of all other pupils. Across the EU as a whole, there is a high degree of persistence of educational attainment between generations. In 2011, among those age 25-59 whose

parents had a low level of education, 34% had a low level themselves. By comparison, 8% of those whose parents had a medium level of education and 3% of those whose parents had a high level of education had a low level themselves (Grundiza & Lopez Vilaplana, 2013).

A number of additional factors have been linked with the chances of a child growing up in poverty experiencing poverty as an adult. Among these, parental income has been cited as one of the best predictors of a child's future life chances (d'Addio, 2007; HM Government, 2014). In the UK, someone in poverty as a teenager in the mid 1980s was almost four times as likely to be in poverty as an adult compared to those who were not in poverty as teenagers (Blanden and Gibbons, 2006). However, rather than a lack of income itself causing poor children to grow up to be poor adults, the evidence suggests that it is an indicator of a broader level of disadvantage that causes poverty to persist across generations (Blanden & Gibbons, 2006); children growing up in low-income households have poorer home environments, in terms of home learning, health and nutrition and parents invest less in their education. It is therefore argued that the impact of parental income on future poverty acts mainly through impacting on the child's educational attainment (HM Government, 2014).

The composition of the household has been identified as an important consideration. Previous research suggests that families with large numbers of children may be more vulnerable to poverty; a high ratio of children to adults affects the number of household members that limited resources need to provide for and there is evidence of a negative correlation between the number of children in a household and their educational outcomes (HM Government, 2014). In the US, families with two adults on average have higher incomes than those with different family structures (Bird, 2007) and it has been suggested that lone parenthood may increase the likelihood of poverty being transmitted across the generations (Bird, 2007; HM Government, 2014); this is likely to be related in part to the adverse impact of parental separation on the child's health and development (d'Addio, 2007), which is likely in turn to impact on their educational outcomes.

Beyond having a direct impact on the current risk of poverty, parental employment has also been identified as one of the key factors in the transmission of poverty from childhood to adulthood (Blanden & Gibbons, 2006; Field, 2010). Evidence suggests that children who grow up in households where one or more parents is out of work, are more likely to be out of work themselves as adults (Grundiza & Lopez Vilaplana, 2013), although the mechanism by which worklessness is transmitted is unclear. There is also some evidence of a relationship between the job that parents do and the outcomes for their children (HM Government, 2014).

1.2 The present study

The primary aim of the analysis presented in this paper is to provide further evidence regarding the intergenerational transmission of disadvantage in the UK. In particular, it seeks to identify which childhood factors are the most important predictors of educational outcome, poverty status and severely material deprivation. A further aim is to investigate to what extent the evidence supports the view that the primary mechanism for the intergenerational transmission of disadvantage is through educational attainment or whether, after accounting for educational attainment, other factors still appear to play a role.

While for the UK there is considerable evidence that disadvantages are transmitted from one generation to the next, the extent of this issue across different countries varies considerably (Corak, 2006). Making international comparisons should be done with caution as evidence suggests that the level of intergenerational mobility within a country depends to some extent on the measure being used to assess it (Blanden, 2009). There is also evidence that mobility can vary for different groups within a country; for example, in the UK, mobility is higher among lower income groups than it is for those on higher incomes (d'Addio, 2007). Nevertheless, evidence suggests that overall the UK, France and Southern Europe are characterised by low mobility, while mobility is highest for the Nordic countries (Corak, 2006; Blanden, 2009). This paper extends the analysis conducted for the UK to other EU countries to enable comparison across the EU of countries with differing welfare regimes.

Collecting data suitable for the analysis of intergenerational transmission of poverty is not straightforward, particularly on a cross-country basis. The requirements of an ideal dataset are restrictive: a large sample size, including measures of well-being and poverty status; repeated observations of income over time; retrospective information on other factors relevant to the transmission process; and data linked across generations (Jenkins & Siedler, 2007b). Whilst there are some limitations in comparison to approaches such as the use of large scale cohort studies, the collection of relevant retrospective information in routine data collection has been identified as a cost effective way of providing suitable data (Corak, 2006).

In 2011, EU Statistics on Income and Living Conditions (EU-SILC) provided an opportunity to address this issue through the inclusion of an ad hoc module on intergenerational transmission of disadvantages. A number of additional variables were collected from adults aged 25-59 inclusive, relating to their circumstances when they were approximately 14 years old. These additional variables covered details of the household composition, parents' employment statuses, economic situation of the household, and parents' education levels and country of birth/citizenship. (For the full list of the variables see Annex 1). The 2011 EU-SILC dataset meets many of the data requirements for analysis of intergenerational transmission of poverty. It has the additional advantage that harmonised data are available for a number of European countries, collected in the same timeframe; this provides an opportunity for cross country comparison which is typically not possible using other methodologies and sources.

This paper presents the results of multivariate analyses using 2011 EU-SILC data for the UK and an additional 15 EU member states.

2. METHODS

Logistic regression techniques were carried out to determine the extent to which childhood factors predicted low educational outcome, poverty and severe material deprivation in the adult respondent. For the purpose of this analysis, low educational outcome is defined as ISCED levels 0-2. Poverty is based on the standard EU at-risk-of-poverty measure: living in a household whose equivalised disposable income is below 60% of the national median household disposable income. Severe material deprivation also uses the standard EU definition: living in a household unable to afford 4 of 9² items considered essential for social inclusion. In order to investigate the impact of educational attainment on the predictors of poverty and severe material deprivation, logistic regressions were run for both these outcomes both excluding and including educational outcomes.

2.1 Explanatory variables

The survey collected data on a number of variables relating to the intergenerational transmission of disadvantage (see Annex 1). Some of these raw variables were used directly in the analysis. However, a number of additional variables were derived from this raw data. In some cases this was to reduce the number of overall variables in the model and aid interpretation. In others, recoding of the variables allowed information to be included that would otherwise cause unacceptably high levels of missing values. The logistic procedure automatically deletes observations which include a missing value for any of the independent variables in the model. Including a variable with a high level of missing values therefore results in the loss of valuable information in these observations. For example father's and mother's employment status combined information on whether or not the parent was employed as well as the managerial position of employed parents. This allowed information on managerial status to be included where use of the raw variable would have resulted in all observations where parents were not employed being lost.

In some cases, it was not possible to recode variables to reduce the number of missing values. Those variables with unacceptably high levels of missing values were excluded from the analysis. This was the case for the variables relating to the father and mother's socio-economic class. Certain key variables were retained regardless of the level of missingness, for example parents' education levels. Citizenship was dropped in favour of country of birth since both reflect differences in ethnicity but country of birth had greater explanatory power than citizenship. The final set of explanatory variables used in the analysis is shown in Annex 2.

2.2 Population studied

Data for countries outside of the UK were chosen based mainly on the extent of missing data in the variables of interest. However, some countries with high levels of missing data were included to ensure a representative spread of countries from all geographical locations across the EU.

The intergenerational transmission of disadvantage module on EU-SILC, and therefore this analysis, focussed on individuals aged 25-59 inclusive at the time of interview. Additionally,

² Currently these 9 items are: mortgage or rent payments, utility bills, hire purchase instalments or other loan payments; one week's annual holiday away from home; a meal with meat, chicken, fish (or vegetarian equivalent) every second day; unexpected financial expenses; a telephone (including mobile phone); a colour TV; a washing machine; a car; keeping the home adequately warm.

because the intention was to compare the differing experiences of individuals growing up in different EU countries, the sample for each country was restricted to respondents who were expected to have been resident in the survey country at the time of the reference period and for the rest of their childhood. Those who were born elsewhere but had moved to the survey country by age 14 and those who were born in the survey country were therefore included; although respondents born in the survey country may not have grown up there, it was expected that sufficient numbers of them would have done so, to justify including them.

2.3 Building the models

Age group and gender were included in all the models as control variables. Variables were chosen for testing in the models based on previous research. For the UK models, variables were entered into the model one at a time. The decision of whether or not to retain variables in the model was based on two criteria. The first was if they were significant predictors of the outcome, measured by the significance of the Wald chi-square measure. The second was based on an assessment of the goodness-of-fit of the model. When it comes to goodness-of-fit of a logistic regression model, there are a number of measures that can be used, none of which are used universally (Tabachnick & Fidell, 2007). In this analysis, the Akaike Information Criterion (AIC) was the main measure used. The AIC provides a relative measure of the fit of two models. By comparing the value of the AIC for the intercept only model with the AIC of the model including covariates, it is possible to assess if the inclusion of the covariates has improved the model. This improvement is evident by a reduction in the AIC for the model including covariates. Variables were retained in the UK model if they improved its fit, based on this criterion. For the remaining EU countries, a stepwise procedure was used with the significance level for entry into the model and retention in it set at 0.1.

The AIC is not an absolute measure so it is only possible to assess an improvement directly by the relative reduction within a model. In order to compare across models, the percentage reduction in the AIC is included in the results, to provide some measure of the differences in the fits of the different models. Other goodness-of-fit statistics quoted in the results are the statistical significance of the likelihood ratio and the score. In both these cases, a statistically significant result indicates that including the covariates significantly improves the model compared to the intercept only model. In addition, the results of Hosmer and Lemeshow tests are included. This test assesses the distribution of the observations among deciles of risk and a non-significant result indicates a good model; observations among those in the outcome category are clustered in the higher deciles of risk. Finally the *c* measure is provided. This gives an indication of the probability that a randomly selected pair of cases from each outcome category will be correctly classified, ranging from 0.5 for a correct classification based entirely on chance, to 1 for a perfect prediction from the model (Tabachnick & Fidell, 2007). Therefore the closer the *c* measure is to 1, the better the model.

3. MODELLING FUTURE LIFE CHANCES IN THE UK

The factors that were included in the final models of education, poverty and severe material deprivation for the UK are shown in Table 1. Table 1 indicates that there is some overlap between the predictors of educational outcomes and severe material deprivation in the UK, while slightly different factors predict poverty status.

Table 1. Predictors of education, poverty and severe material deprivation in the UK

Factor	Education	Poverty	Severe material deprivation
Gender	●	● ●	● ●
Age group	●	● ●	● ●
Respondent's educational attainment		●	●
Father's educational attainment	●		
Mother's educational attainment	●		
Parents' educational attainment		● ●	●
Respondent's country of birth			
Father's country of birth			
Mother's country of birth			
Country of birth of respondent and parents		● ●	
Presence of parents in the household			● ●
Number of adults in the household	●		
Number of children in the household	●		● ●
Number of workers in the household		● ●	
Father's activity status			
Mother's activity status		●	
Father's employment status	●		● ●
Mother's employment status	●		● ●
Financial situation of the household		●	●
Ability to make ends meet	●	●	

● Variables included in the final models when not controlling for respondent's educational level

● Variables included in the final models when controlling for respondent's educational level

The odds ratios associated with these factors, together with the corresponding confidence intervals, are shown in Figures 1 to 3 for each of the final models. The likelihood is plotted on a log scale, with bars to the left indicating a reduced likelihood of the outcome and bars to the right showing an increased likelihood. Solid bars show significant results; darker solid bars show results with $p < 0.05$ while lighter solid bars show results with $p < 0.1$. Hollow bars show non-significant results. Sample sizes for a category of less than 100 are shown in brackets alongside the relevant bar. Detailed regression outputs for the UK models are provided in Annex 3. Similar outputs are available for other countries on request.

3.1 Predictors of educational attainment

Figure 1. The effect of childhood factors on the odds of a low educational outcome as an adult in the UK

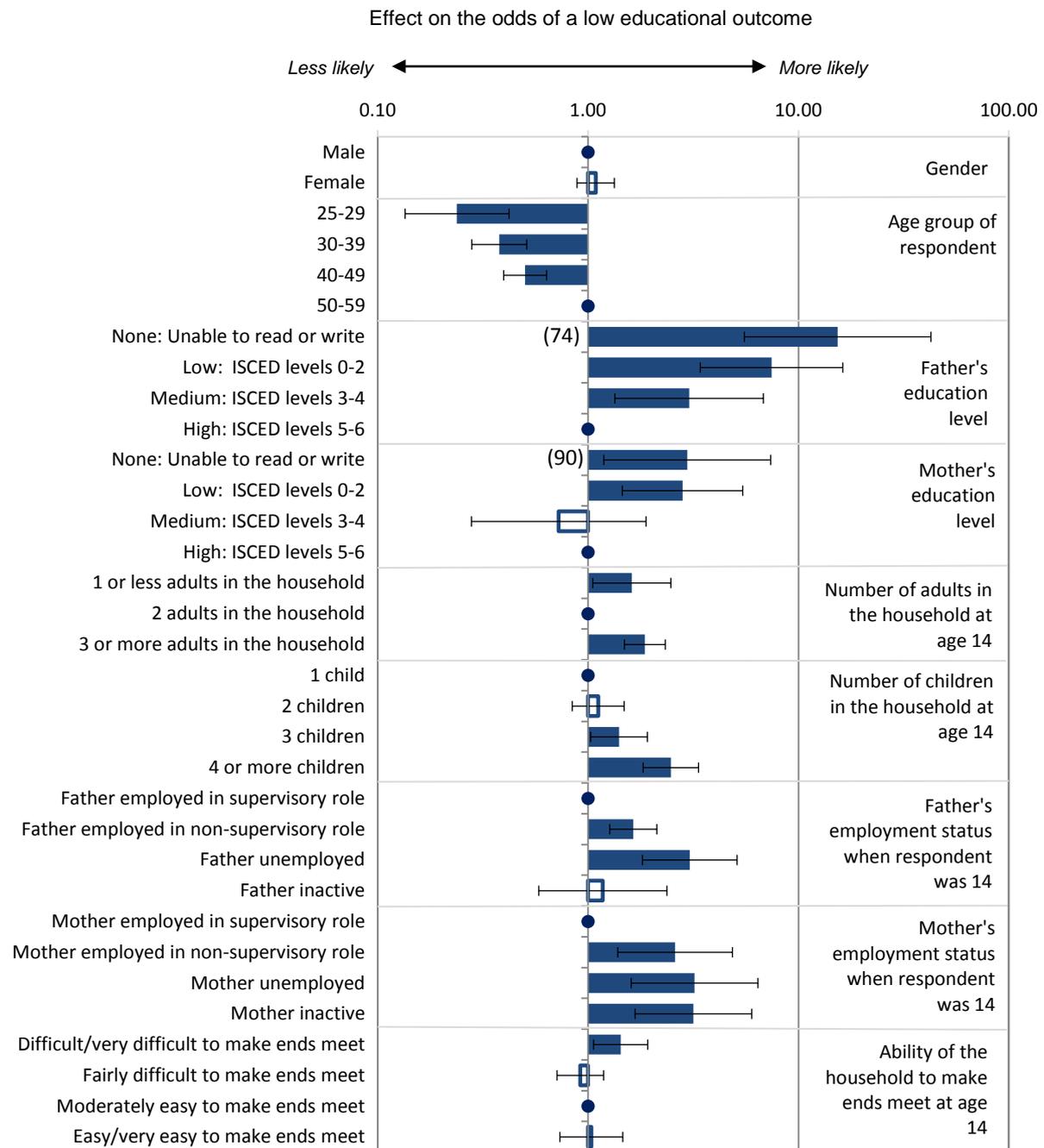


Figure 1 shows that, holding all other characteristics constant and equal, the most important predictor of educational outcome in the UK was the father's education level, with a respondent 7.5 times more likely to have a low educational outcome if their father had a low level of education compared to a highly educated father³. Mother's education level was also important though to a lesser degree; a respondent was approximately 3 times more likely to

³ Low parental educational attainment is defined as ISCED levels 0-2. High attainment is IECE levels 5-6

have a low educational outcome if their mother had a low level of education. While the results for those with fathers who were unable to read or write are even more striking, it should be noted that only a small proportion of individuals reported having a mother or father unable to read or write.

Other childhood factors which proved to be significant predictors⁴ were parental employment status and the household composition.

Compared with those whose father was employed in a managerial position, those whose father was unemployed were around three times as likely to have a lower educational outcome. Similarly, the odds of low educational outcomes increased approximately threefold when the mother was unemployed, with a comparably sized increase in likelihood also evident where the mother was inactive. The model also indicated an impact on educational attainment where parents were not in managerial roles.

In terms of the household composition, growing up in a single adult household and in a household with more than two children significantly increased the likelihood of a low educational outcome. Holding all else equal, the odds of a low educational outcome were 1.6 times higher for those growing up in single adult households compared to households with two adults. Interestingly, households with three or more adults also increased the odds of low educational attainment by a factor of almost 2.

Growing up in a household with three or more children increased the likelihood of a low level of education by 1.4 times compared with being the only child, while those growing up in a household with four or more children were 2.5 times as likely to have low educational attainment.

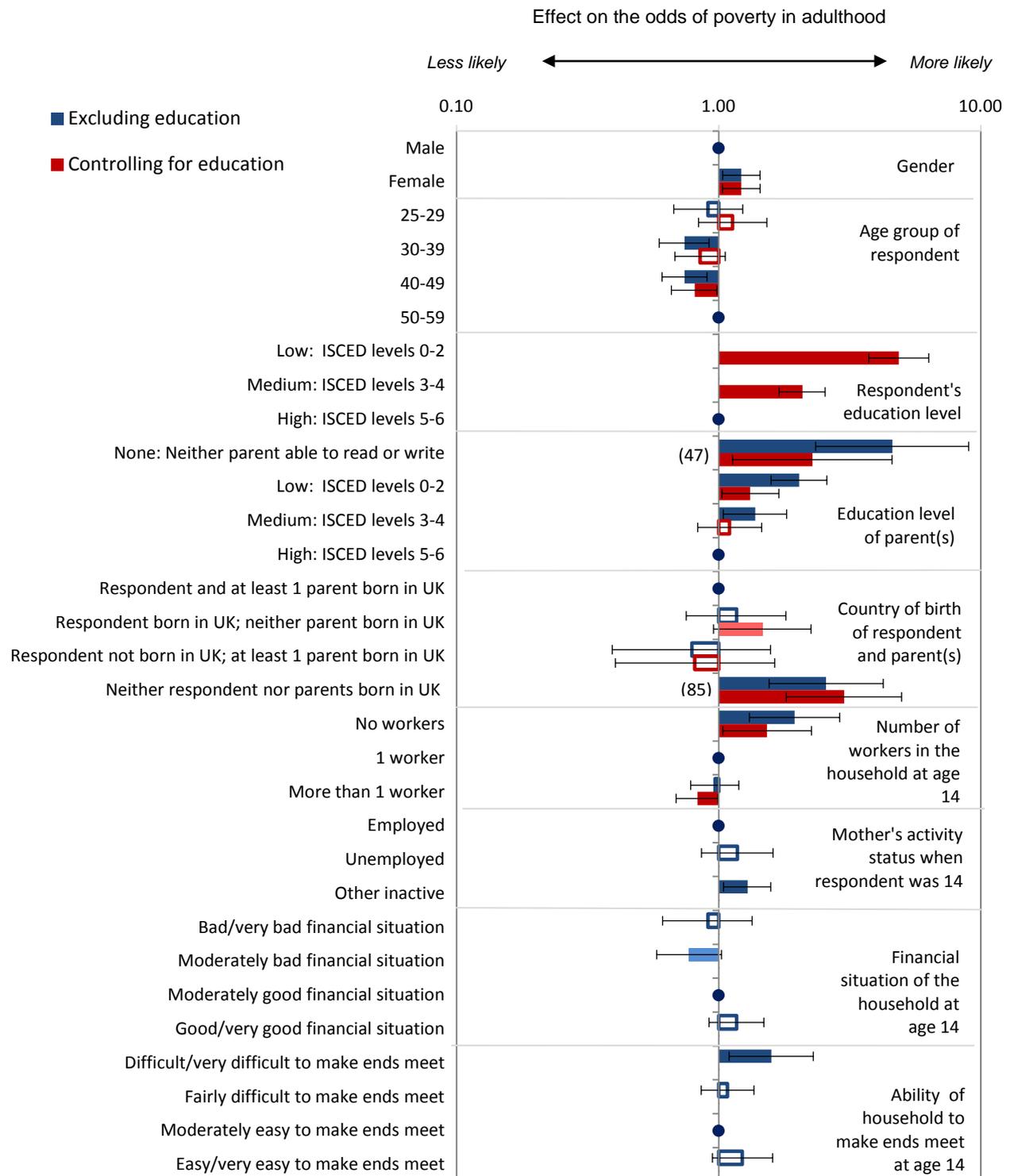
There was also a relationship between educational attainment and individuals' subjective assessment of their household financial situation as a child. Holding all else equal, those growing up in households experiencing difficulty or great difficulty in making ends meet were around one and a half times as likely to have a low educational outcome compared to those in households that found it moderately easy to make ends meet.

Including all these variables in the model resulted in a 16% reduction in the AIC and gave a significantly better model when compared with the intercept only model ($p < 0.0001$ for both Likelihood ratio and score). The c measure of 0.80 indicated a good chance of accurately predicting the outcome for the respondents. However, the Hosmer and Lemeshow test indicated that the model was significantly different from the perfect model ($p < 0.05$).

⁴ ($p < 0.05$)

3.2 Predictors of relative income poverty

Figure 2. The effect of childhood factors on the odds of experiencing poverty in adulthood in the UK



Considering the effects of the various factors on poverty status in Figure 2, when the respondent's own educational attainment was excluded from the model and holding all other characteristics constant and equal, the highest education level of the most educated parent was the most important predictor of poverty status. Those with low parental educational

attainment were twice as likely to be in poverty now as those children who had at least one highly educated parent. The odds of being in poverty were 4.6 times higher for those with parents unable to read or write but, again, the sample size for this group is small.

When the respondent's own educational attainment is included in the model, this becomes the most important predictor of current poverty status, with those with a low level of educational attainment almost five times as likely to be in poverty now as those with a high level of education. Controlling for the individual's own education reduces the importance of parental education level as a predictor, though it remains significant. Holding all else equal, those with low parental qualifications are 1.3 times more likely to be in poverty than those where at least one parent had high educational attainment.

There is some evidence of a relationship between current poverty and individuals' subjective assessment of their financial situation as a child. Holding all else equal, the ability to make ends meet impacts on the future poverty status with those growing up in households experiencing difficulty or great difficulty making ends meet increasing the odds of adult poverty by 1.6 times compared with those who found things moderately easy, although this effect disappears when controlling for the respondent's educational outcome.

The number of workers in the household in childhood was also found to be a significant predictor of current poverty status. Holding all else equal, those growing up in a workless household were almost twice as likely to experience poverty in adulthood, compared with those growing up in households with at least 1 worker. Introducing the educational attainment of the individual slightly reduced the effect of worklessness on the odds of being in poverty, but also resulted in a significant effect for those who grew up in households with more than one worker, with lower odds that these children would be in poverty as adults compared with households with just 1 working adult.

The goodness-of-fit measures indicated that inclusion of the variables in the poverty models provided relatively low improvements in the model compared to the intercept only model. The reduction in the AIC for the model in which the respondent's educational attainment was excluded was only 2.4% and the c measure was 0.63. Including the educational attainment of the respondent improved the model, giving a reduction in the AIC of 5.3% and a c measure of 0.67. Both models were significantly better than the intercept only model ($p < 0.0001$) and neither was significantly different from the perfect model ($p > 0.05$).

3.3 Predictors of severe material deprivation

As with the poverty model, the results of the model for severe material deprivation in Figure 3 show that, when included in the model, the respondent's own educational attainment is the most important predictor of their deprivation status. Compared to those with a high level of education and holding all else equal, those with low educational attainment are 11 times as likely to be severely materially deprived. Those with a medium level of education (ISCED 3-4) are 3 times as likely to be severely deprived.

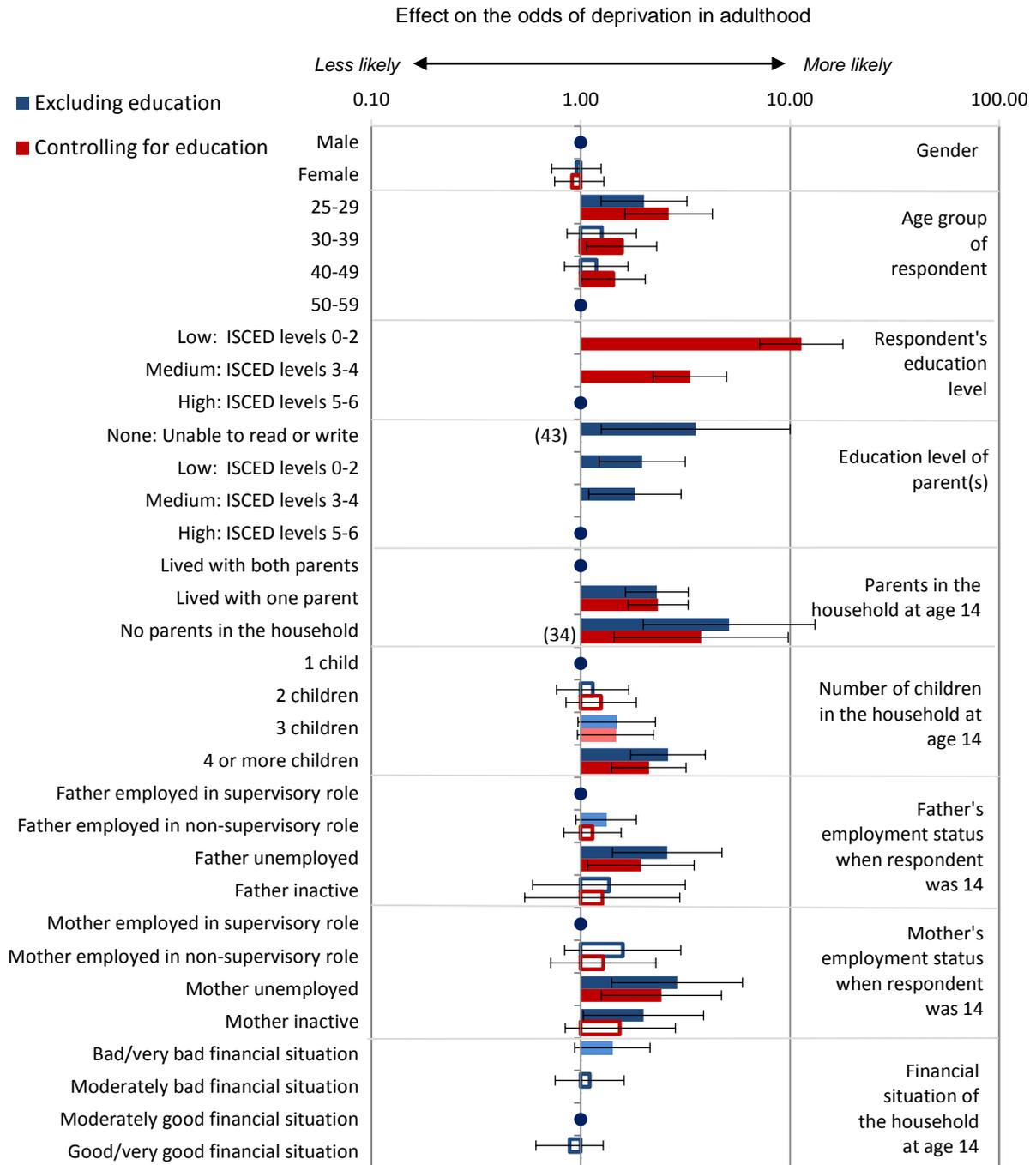
Before accounting for the respondent's own education level, parental education is important, but in contrast to the previous models, it is not the most important predictor of deprivation status. Instead the presence of parents is the most important predictor, with an individual 2.3 times as likely to be severely materially deprived if they grew up in a single parent household, compared with a household with two parents. This effect persists even after controlling for the individual's level of education. The number of children in the household is also an important predictor of deprivation with the odds 2.6 times higher for those who grew up in households with four or more children compared with a single child. This result reduces by a small amount when educational attainment is added to the model.

Parental employment has an impact on the deprivation status, with the odds of severe material deprivation in adulthood 2.6 times higher for those whose father was unemployed compared with those who worked in a managerial role. There was a similar effect for maternal unemployment, with the odds of experiencing severe material deprivation 2.9 times higher, compared with those whose mother worked as a manager. The effect of both paternal and maternal unemployment reduces slightly when controlling for education.

There is some evidence that the financial situation of the household as a child has an effect on the likelihood of deprivation status in adulthood ($p < 0.1$) with those growing up in what they perceived to be households in a bad or very bad financial situation 1.4 times as likely to be severely materially deprived. Again, this effect disappears once educational outcomes have been controlled for.

The inclusion of the variables in the models of severe material deprivation caused a reduction in the AIC of 6.1% when the respondent's educational attainment was excluded, and 11.1% when it was included. Both models were significantly better with the inclusion of the variables compared to the intercept only models ($p < 0.0001$) and neither was significantly different from the perfect model ($p > 0.05$). C measures of 0.71 for the model excluding the respondent's educational attainment and 0.77 when it was included, suggest a good chance of accurately classifying a respondent.

Figure 3. The effect of childhood factors on the odds of experiencing severe material deprivation in adulthood in the UK



4. COMPARISONS WITH OTHER EU COUNTRIES

The total number of respondents and the numbers in each outcome category are given in Table 2 for all the countries included in the analysis, grouped by their geographical location. This shows clearly that there is considerable variability in the proportions of the relevant sub-populations having low educational outcomes, and those experiencing poverty and severe material deprivation across the different EU member states. Low educational outcomes affect much larger percentages of this group in Southern Europe compared with the other member states. Northern Europe and Scandinavia had relatively low poverty and severe material deprivation rates, with Scandinavian and Dutch study populations showing particularly low rates of severe material deprivation (along with a very small number of people in the sample). By comparison, Italy, the Baltic States and Eastern Europe had relatively high rates of severe material deprivation among respondents. Southern Europe was characterised by relatively high poverty rates, but relatively low severe material deprivation rates, except in the case of Italy.

Table 2. Numbers of respondents in total and for each outcome category (unweighted), with the corresponding percentages of the study population (weighted)

Region	Country Code	Country	Total number of respondents (unweighted)	Low educational outcome		In poverty		Severely materially deprived	
				Unweighted N	%	Unweighted N	%	Unweighted N	%
Northern Europe	UK	UK	5,073	473	9	699	12	240	5
	FR	France	8,495	1,286	17	742	11	303	5
	AT	Austria	5,106	567	13	359	8	128	3
	BE	Belgium	4,002	715	20	265	9	118	4
	NL	Netherlands	4,671	627	18	211	9	37	2
Scandinavia	DK	Denmark	2,208	292	20	99	11	27	3
	SE	Sweden	1,640	73	8	127	11	11	2
Southern Europe	IT	Italy	18,756	6,961	42	2,818	17	1,545	10
	PT	Portugal	5,025	3,354	65	729	15	340	7
	ES	Spain	13,420	5,840	42	2,497	18	351	3
Baltic States	EE	Estonia	4,027	451	10	702	17	349	9
	LV	Latvia	4,175	551	15	844	20	1,184	30
	LT	Lithuania	4,355	327	9	695	20	606	17
Eastern Europe	BG	Bulgaria	5,906	1,119	21	915	17	2,159	39
	HU	Hungary	12,619	2,175	17	1,790	13	2,932	23
	PL	Poland	13,661	1,351	10	2,513	17	1,695	12

The odds ratios for the significant predictors in each of the models are shown in Tables 3-7. The size of the odds ratio is also reflected in the intensity of the colour coding. The country codes used in the tables are shown in Table 2. An X in the table indicates no statistically significant relationship. All figures indicate a significance level of $p < 0.05$, except for those in italics, where $p < 0.1$. A red border indicates a sample size of less than 100 respondents.

Table 3. Odds ratios for the significant predictors of the respondent's educational outcomes across the EU

Education	UK	Northern Europe				Scandinavia		Southern Europe			Baltic states			Eastern European		
		FR	AT	BE	NL	DK	SE	IT	PT	ES	EE	LV	LT	BG	HU	PL
Gender																
Male (reference group)																
Female	X	1.24	2.22	X	1.23	X	0.64	0.88	0.56	0.80	0.47	0.39	0.54	X	1.42	X
Age																
25-29	0.24	0.35	X	0.40	0.57	0.45	X	0.48	0.45	0.78	5.72	4.41	6.99	2.39	X	X
30-39	0.38	0.39	0.63	0.31	0.44	0.34	X	0.64	0.58	0.58	4.00	4.45	5.77	2.01	1.17	0.75
40-49	0.50	0.53	0.62	0.48	0.69	0.73	0.35	0.92	X	0.72	X	X	X	X	X	0.62
50-59 (reference group)																
Father's educational attainment																
None: Unable to read or write	15.37	4.47	X	-	11.48	-	-	36.40	20.24	14.33	X	47.66	-	19.36	12.14	3.90
Low: ISCED levels 0-2	7.45	2.98	2.05	-	3.80	-	-	11.44	6.08	5.81	2.18	6.12	-	6.78	6.91	2.07
Medium: ISCED levels 3-4	3.02	X	X	-	1.70	-	-	X	2.03	3.66	X	2.68	-	2.37	5.49	X
High: ISCED levels 5-6 (reference group)																
Mother's educational attainment																
None: Unable to read or write	2.96	2.85	10.13	-	18.02	-	-	36.90	17.54	16.37	12.07	48.54	18.88	26.25	14.76	3.64
Low: ISCED levels 0-2	2.81	1.77	6.30	-	5.90	-	-	13.57	7.12	4.28	4.71	22.90	10.92	8.33	8.56	4.40
Medium: ISCED levels 3-4	X	X	2.54	-	3.51	-	-	X	X	2.41	2.25	6.19	4.44	X	4.37	X
High: ISCED levels 5-6 (reference group)																
Parents' educational attainment																
None: Unable to read or write	-	-	-	15.27	-	-	-	X	-	X	-	X	-	-	X	-
Low: ISCED levels 0-2	-	-	-	8.11	-	3.04	3.81	X	-	X	-	0.22	-	-	X	-
Medium: ISCED levels 3-4	-	-	-	2.77	-	2.03	1.92	X	-	X	-	X	-	-	X	-
High: ISCED levels 5-6 (reference group)																
Derived country of birth																
Respondent and at least 1 parent born in survey country (reference group)																
Respondent born in survey country; neither parent born in survey country	-	-	1.68	-	-	-	-	-	X	1.78	-	-	-	-	-	-
Respondent not born in survey country; at least 1 parent born in survey country	-	-	X	-	-	-	-	-	0.51	0.65	-	-	-	-	-	-
Neither respondent nor parents born in survey country	-	-	2.83	-	-	-	-	-	0.30	X	-	-	-	-	-	-
Presence of parents in the household																
Lived with both parents (reference group)																
Lived with one parent	-	1.46	-	1.48	-	-	-	-	X	-	-	-	-	-	X	1.43
No parents in the household	-	1.81	-	X	-	-	-	-	3.24	-	-	-	-	-	3.31	2.52
Number of adults in the household																
1 or less																
1 or less	1.61	X	1.90	-	2.11	-	3.90	X	X	X	-	-	X	-	X	X
2 (reference group)																
3 or more	1.86	1.32	1.20	-	X	-	X	1.39	1.20	1.17	-	-	1.34	-	1.33	1.16

Education	UK	Northern Europe				Scandinavia		Southern Europe			Baltic states			Eastern European		
		FR	AT	BE	NL	DK	SE	IT	PT	ES	EE	LV	LT	BG	HU	PL
Number of children in the household																
1 (reference group)																
2	X	X	X	X	-	0.73	-	1.20	1.19	1.17	X	X	X	1.22	X	X
3	1.40	1.25	1.26	X	-	X	-	1.63	1.86	1.46	1.37	X	1.53	4.15	1.68	X
4 or more	2.47	1.60	1.44	1.62	-	1.65	-	2.56	2.67	1.86	1.78	1.85	2.18	7.16	4.01	1.58
Number of workers in the household																
No workers	-	-	-	-	-	-	-	X	X	X	-	-	-	-	-	2.00
1 worker (reference group)																
More than 1 worker	-	-	-	-	-	-	-	1.39	1.39	1.24	-	-	-	-	-	1.23
Father's activity status																
Employed (reference group)																
Unemployed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other inactive	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mother's activity status																
Employed (reference group)																
Unemployed	-	X	-	-	-	-	X	X	-	-	-	-	-	2.95	X	-
Other inactive	-	1.23	-	-	-	-	2.14	1.22	-	-	-	-	-	1.52	1.69	-
Father's employment status																
Employed in supervisory role (reference group)																
Employed in non-supervisory role	1.64	1.76	1.31	1.53	-	-	-	1.31	1.48	1.83	1.57	-	-	-	1.77	1.76
Unemployed	3.04	X	4.17	2.56	-	-	-	1.84	X	2.67	X	-	-	-	5.33	2.51
Other inactive	X	1.68	2.12	X	-	-	-	1.40	3.58	2.48	X	-	-	-	2.65	X
Mother's employment status																
Employed in supervisory role (reference group)																
Employed in non-supervisory role	2.59	-	-	-	-	-	-	-	2.00	-	-	-	-	-	-	-
Unemployed	3.21	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-
Other inactive	3.17	-	-	-	-	-	-	-	2.21	-	-	-	-	-	-	-
Financial situation																
Bad/very bad	-	1.40	1.86	1.80	-	-	-	2.28	2.45	2.23	-	-	2.66	1.63	2.10	1.90
Moderately bad	-	X	X	X	-	-	-	1.44	1.44	1.49	-	-	1.36	1.41	X	1.47
Moderately good (reference group)																
Good/very good	-	X	X	X	-	-	-	X	0.78	0.84	-	-	-	0.80	0.84	0.87
Ability to make ends meet																
Difficult/very difficult	1.43	-	-	-	1.34	-	-	1.24	-	X	1.72	1.38	-	-	-	-
Fairly difficult	X	-	-	-	0.74	-	-	1.17	-	X	1.42	1.31	-	-	-	-
Fairly easy (reference group)																
Easy/very easy	X	-	-	-	X	-	-	X	-	0.85	X	X	-	-	-	-

4.1 Educational attainment

Considering Table 3 overall, many of the same factors predicted educational outcomes across the EU countries examined. For all the countries, the level of education of the parents is either one of or the most important predictor of educational outcomes for the individual, whether this is for each parent individually or for both parents combined. There is some variation in the odds ratios across countries. For example, in Denmark, holding all else equal, those whose parents had low educational attainment were around 3 times as likely to have a low level of education themselves when compared with those for whom at least one parent had a high education level. By comparison, in Italy, the odds of having low educational attainment were around 13.5 times higher for those with a mother with low qualifications and 11.5 times higher for those with a father with low qualifications, compared with having a mother/father who had a high level of education. In general, the relative impact of parental education is particularly high in the Southern and Eastern European countries and the Baltic States, in contrast with relatively lower rates in most of the Northern European and Scandinavian countries studied.

Other factors that appear to be almost universally important are the household composition in terms of number of adults and children, as well as one or other of the subjective assessments of household income (ability to make ends meet or financial situation of the household). Overall the odds ratios for these factors are fairly similar across all the countries.

Table 3 also reveals a notable lack of predictors of educational outcomes in the Netherlands, Latvia and the Scandinavian countries, among the variables included in this analysis. In particular, for Denmark, only two of the variables are identified as significant predictors of educational outcomes: parental educational attainment and the number of children in the household. Neither of the subjective income variables predicts educational outcomes in either of the Scandinavian countries included in this study.

In the UK and France father's educational attainment is a more important predictor of the respondent's own educational attainment than the mother's, whereas in most of the other countries, the mother's educational attainment is generally slightly more important.

Father's employment status is a predictor of educational outcomes in all but 6 countries and generally having a father who was employed in a non-supervisory role rather than a managerial position increased the likelihood of a low educational outcome by between 1.3 and 1.8 times. The figures related to unemployed fathers were more variable but for some countries small sample sizes for this category may have presented an issue. The mother's employment status was a predictor of educational outcomes only in the UK and Portugal, though the related variable mother's activity status was a predictor in 5 additional countries, spread across the different areas of Europe. In these cases, having an inactive mother increased the likelihood of poor educational outcomes, while maternal unemployment proved not to be significant, though in all these cases the sample size of unemployed mothers was small.

Table 4. Odds ratios for the significant predictors of poverty across the EU (excluding the respondent's educational attainment)

Poverty (excluding education)	UK	Northern Europe				Scandinavia		Southern Europe			Baltic states			Eastern European		
		FR	AT	BE	NL	DK	SE	IT	PT	ES	EE	LV	LT	BG	HU	PL
Gender																
Male (reference group)																
Female	1.22	1.20	X	X	1.38	X	X	1.16	X	X	0.81	0.87	X	X	X	X
Age																
25-29	X	X	1.41	1.46	1.88	8.03	3.06	2.48	X	1.34	X	0.75	X	2.17	1.87	1.33
30-39	0.74	1.21	X	X	X	X	X	1.66	1.38	X	X	X	1.57	1.91	1.85	1.31
40-49	0.74	X	0.77	X	X	X	X	1.53	1.26	1.44	X	X	1.52	1.37	1.60	1.32
50-59 (reference group)																
Father's educational attainment																
None: Unable to read or write	-	2.74	-	-	-	-	-	6.22	-	2.21	-	4.81	-	3.96	3.00	2.20
Low: ISCED levels 0-2	-	1.58	-	-	-	0.59	-	X	-	1.60	1.74	1.74	-	5.32	2.37	1.44
Medium: ISCED levels 3-4	-	X	-	-	-	0.61	-	X	-	X	1.44	X	-	X	1.47	X
High: ISCED levels 5-6 (reference group)																
Mother's educational attainment																
None: Unable to read or write	-	1.94	8.99	4.57	-	-	-	4.95	4.29	3.05	-	2.48	-	46.24	4.06	3.36
Low: ISCED levels 0-2	-	1.44	1.97	1.76	-	-	-	2.04	2.19	1.70	1.74	2.32	-	23.05	2.42	2.69
Medium: ISCED levels 3-4	-	X	X	X	-	-	-	X	X	X	1.44	1.46	-	6.86	X	1.71
High: ISCED levels 5-6 (reference group)																
Parents' educational attainment																
None: Unable to read or write	4.60	-	-	-	-	-	-	X	-	-	-	-	3.82	X	-	-
Low: ISCED levels 0-2	2.03	-	-	-	-	-	-	X	-	-	-	-	2.15	0.20	-	-
Medium: ISCED levels 3-4	1.38	-	-	-	-	-	-	X	-	-	-	-	1.38	X	-	-
High: ISCED levels 5-6 (reference group)																
Derived country of birth																
Respondent and at least one parent born in survey country (reference group)																
Respondent born in survey country; neither parent born in survey country	X	1.39	X	1.80	2.89	-	-	-	-	1.88	1.75	-	-	-	-	-
Respondent not born in survey country; at least 1 parent born in survey country	X	X	X	2.23	X	-	-	-	-	1.88	X	-	-	-	-	-
Neither respondent nor parents born in survey country	2.57	1.84	2.36	2.87	2.74	-	-	-	-	2.07	1.69	-	-	-	-	-
Presence of parents in the household																
Lived with both parents (reference group)																
Lived with one parent	-	1.73	-	X	-	-	-	-	-	-	-	-	2.01	-	-	-
No parents in the household	-	2.87	-	8.70	-	-	-	-	-	-	-	-	X	-	-	-
Number of adults in the household																
1 or less																
1 or less	-	X	-	-	-	-	1.93	X	-	1.53	0.58	-	0.39	X	-	X
2 (reference group)																
3 or more	-	1.15	-	-	-	-	2.00	1.15	-	X	0.82	-	X	1.37	-	1.12

Poverty (excluding education)	UK	Northern Europe				Scandinavia		Southern Europe			Baltic states			Eastern European		
		FR	AT	BE	NL	DK	SE	IT	PT	ES	EE	LV	LT	BG	HU	PL
Number of children in the household																
1 (reference group)																
2	-	1.22	X	X	-	-	-	1.16	-	X	X	X	-	X	X	X
3	-	1.30	X	X	-	-	-	1.66	-	X	X	X	-	1.98	1.23	X
4 or more	-	1.90	1.48	1.62	-	-	-	2.04	-	1.23	1.46	1.48	-	2.96	2.31	1.29
Number of workers in the household																
No workers	1.95	-	-	-	-	-	-	-	-	-	X	-	X	-	X	-
1 worker (reference group)																
More than 1 worker	X	-	-	-	-	-	-	-	-	-	0.55	-	0.56	-	0.80	-
Father's activity status																
Employed (reference group)																
Unemployed	-	-	-	2.23	X	-	7.37	-	-	-	-	3.03	-	-	2.68	-
Other inactive	-	-	-	X	2.40	-	4.10	-	-	-	-	X	-	-	1.39	-
Mother's activity status																
Employed (reference group)																
Unemployed	X	-	-	3.87	-	-	-	X	-	3.86	-	-	X	-	X	-
Other inactive	1.29	-	-	X	-	-	-	1.39	-	X	-	-	0.67	-	1.41	-
Father's employment status																
Employed in supervisory role (reference group)																
Employed in non-supervisory role	-	1.29	-	-	-	-	-	1.11	-	1.26	-	-	-	-	-	-
Unemployed	-	3.55	-	-	-	-	-	3.30	-	1.99	-	-	-	-	-	-
Other inactive	-	X	-	-	-	-	-	X	-	1.53	-	-	-	-	-	-
Mother's employment status																
Employed in supervisory role (reference group)																
Employed in non-supervisory role	-	-	-	-	-	-	0.43	-	-	1.92	-	-	-	-	-	1.70
Unemployed	-	-	-	-	-	-	X	-	-	X	-	-	-	-	-	3.25
Other inactive	-	-	-	-	-	-	X	-	-	2.17	-	-	-	-	-	1.41
Financial situation																
Bad/very bad	X	-	X	-	-	-	-	1.95	1.55	1.57	1.40	-	-	1.98	1.78	1.52
Moderately bad	0.77	-	0.67	-	-	-	-	1.31	X	1.27	X	-	-	1.44	X	1.25
Moderately good (reference group)																
Good/very good	X	-	X	-	-	-	-	X	X	0.89	0.81	-	-	0.77	1.28	X
Ability to make ends meet																
Difficult/very difficult	1.59	X	1.49	1.68	-	-	-	0.77	1.57	-	-	-	1.45	-	-	-
Fairly difficult	X	X	1.60	1.39	-	-	-	X	X	-	-	-	X	-	-	-
Fairly easy (reference group)																
Easy/very easy	X	1.32	X	0.67	-	-	-	X	X	-	-	-	X	-	-	-

Table 5. Odds ratios for the significant predictors of poverty across the EU (controlling for the respondent's educational attainment)

Poverty	UK	Northern Europe				Scandinavia		Southern Europe			Baltic states			Eastern European		
		FR	AT	BE	NL	DK	SE	IT	PT	ES	EE	LV	LT	BG	HU	PL
Gender																
Male (reference group)																
Female	1.22	1.19	X	1.29	1.36	X	X	1.22	X	1.10	X	1.18	1.20	X	X	X
Age																
25-29	X	1.36	1.50	1.75	2.48	8.46	3.19	2.92	1.37	1.42	0.50	0.59	X	1.70	1.86	1.60
30-39	X	1.49	1.30	X	X	X	X	1.84	1.50	1.24	0.76	X	1.45	1.59	1.80	1.45
40-49	0.81	1.24	X	X	X	X	X	1.57	1.26	1.54	X	X	1.46	1.38	1.63	1.40
50-59 (reference group)																
Educational attainment																
Low: ISCED levels 0-2	4.87	5.65	4.29	5.55	3.65	X	X	4.45	9.63	3.45	8.33	10.78	4.98	15.20	12.17	10.71
Medium: ISCED levels 3-4	2.09	2.94	2.03	2.52	2.49	1.60	1.78	1.95	3.94	1.78	3.61	4.69	3.02	4.58	3.66	4.73
High: ISCED levels 5-6 (reference group)																
Father's educational attainment																
None: Unable to read or write	-	2.00	-	-	X	-	-	4.11	-	-	-	-	-	-	1.59	-
Low: ISCED levels 0-2	-	X	-	-	0.06	0.49	0.59	X	-	-	-	-	-	-	1.36	-
Medium: ISCED levels 3-4	-	X	-	-	0.13	0.53	0.57	X	-	-	-	-	-	-	X	-
High: ISCED levels 5-6 (reference group)																
Mother's educational attainment																
None: Unable to read or write	-	-	8.58	2.41	-	-	-	3.30	X	2.35	-	-	-	7.48	2.48	2.96
Low: ISCED levels 0-2	-	-	X	X	-	-	-	X	X	1.43	-	-	-	5.01	1.56	1.80
Medium: ISCED levels 3-4	-	-	X	X	-	-	-	X	X	X	-	-	-	2.42	X	X
High: ISCED levels 5-6 (reference group)																
Parents' educational attainment																
None: Unable to read or write	2.28	-	-	-	X	-	-	0.39	-	-	-	X	X	-	-	X
Low: ISCED levels 0-2	1.32	-	-	-	11.26	-	-	X	-	-	-	1.50	X	-	-	X
Medium: ISCED levels 3-4	X	-	-	-	5.68	-	-	X	-	-	-	X	X	-	-	X
High: ISCED levels 5-6 (reference group)																
Derived country of birth																
Respondent and at least one parent born in survey country (reference group)																
Respondent born in survey country; neither parent born in survey country	1.47	1.51	-	2.12	3.09	-	-	-	-	X	1.58	-	-	-	-	-
Respondent not born in survey country; at least one parent born in survey country	X	X	-	2.38	X	-	-	-	-	2.15	X	-	-	-	-	-
Neither respondent nor parents born in survey country	3.01	2.08	-	2.98	2.75	-	-	-	-	1.88	1.53	-	-	-	-	-
Presence of parents in the household																
Lived with both parents (reference group)																
Lived with one parent	-	1.30	-	X	-	-	-	-	-	-	-	-	2.31	-	-	-
No parents in the household	-	2.73	-	5.97	-	-	-	-	-	-	-	-	X	-	-	-

Poverty	UK	Northern Europe				Scandinavia		Southern Europe			Baltic states			Eastern European		
		FR	AT	BE	NL	DK	SE	IT	PT	ES	EE	LV	LT	BG	HU	PL
Number of adults in the household																
1 or less	-	-	-	-	-	-	1.81	X	-	1.48	-	-	0.49	X	-	-
2 (reference group)																
3 or more	-	-	-	-	-	-	2.05	1.12	-	X	-	-	0.83	1.36	-	-
Number of children in the household																
1 (reference group)																
2	-	X	X	-	-	-	-	1.12	-	-	-	X	-	X	0.86	X
3	-	X	X	-	-	-	-	1.52	-	-	-	X	-	1.33	X	X
4 or more	-	1.65	1.41	-	-	-	-	1.73	-	-	-	X	-	1.82	1.56	1.13
Number of workers in the household																
No workers	1.53	-	-	-	-	-	-	X	-	1.88	X	-	X	-	2.01	-
1 worker (reference group)																
More than 1 worker	0.83	-	-	-	-	-	-	0.83	-	X	0.61	-	0.74	-	0.78	-
Father's activity status																
Employed (reference group)																
Unemployed	-	-	-	-	X	-	8.20	2.84	-	-	-	-	-	-	-	-
Other inactive	-	-	-	-	2.61	-	4.08	X	-	-	-	-	-	-	-	-
Mother's activity status																
Employed (reference group)																
Unemployed	-	-	-	4.27	-	-	-	X	-	4.31	-	-	-	-	X	-
Other inactive	-	-	-	X	-	-	-	1.21	-	X	-	-	-	-	1.24	-
Father's employment status																
Employed in supervisory role (reference group)																
Employed in non-supervisory role	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unemployed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other inactive	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mother's employment status																
Employed in supervisory role (reference group)																
Employed in non-supervisory role	-	-	-	-	-	-	0.42	-	-	-	-	-	-	-	-	1.39
Unemployed	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	2.58
Other inactive	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	X
Financial situation																
Bad/very bad	-	-	-	-	-	-	-	1.70	-	1.35	-	-	-	1.82	1.48	1.40
Moderately bad	-	-	-	-	-	-	-	1.23	-	1.18	-	-	-	1.79	X	1.18
Moderately good (reference group)																
Good/very good	-	-	-	-	-	-	-	X	-	X	-	-	-	1.33	1.32	X
Ability to make ends meet																
Difficult/very difficult	-	-	-	1.66	-	-	-	0.72	1.67	-	-	-	-	-	-	-
Fairly difficult	-	-	-	1.43	-	-	-	0.90	X	-	-	-	-	-	-	-
Fairly easy (reference group)																
Easy/very easy	-	-	-	0.72	-	-	-	X	X	-	-	-	-	-	-	-

4.2 Relative income poverty

Table 4 indicates a high degree of variability in the predictors of poverty when education is excluded from the model, though it is notable that many of the factors identified in relatively few countries are based on small sample sizes, which might partly explain why they are not significant in some others.

Across almost all the other EU countries examined, parental educational levels, of either one or both parents, were significant predictors of poverty. The largest impacts on poverty were evident in Bulgaria, where, holding all else equal, the odds of being in poverty now were 7 times higher for those with mothers with a medium level of education, 23 times higher for those whose mothers had low qualifications, and 46 times higher for mothers unable to read or write, all compared with those whose mothers had a high level of educational attainment.

In contrast to the UK model, household composition (the number of adults and children) at age 14 proved to be significant predictors in the majority of countries, while living in a workless household during childhood was identified as a predictor in no country other than the UK; however, for Hungary, Estonia and Lithuania, having more than one worker in the household as a child did reduce the likelihood of current poverty.

When the respondent's own educational attainment was included in the modelling (Table 5), this proved to be the most important predictor of poverty for all the countries analysed. A low educational outcome had the biggest relative impact in the Eastern European countries, increasing the likelihood of poverty by between 11 and 15 times compared with respondents with high educational attainment.

In all countries except the Baltic States, parental education remained as a predictor of current poverty even after controlling for the respondent's education level, though its impact was reduced. However the results for the two Scandinavian countries and the Netherlands were somewhat surprising in that they revealed, after holding all else equal and constant, lower odds of being in poverty now if the father had a lower education level than a highly educated father. It is not immediately apparent why this might be the case.

In the Southern and Eastern European countries one or other of the subjective childhood income variables, most often the financial situation of the household during childhood, remained as an important predictor of poverty even after controlling for the respondent's educational attainment. However in most of the Northern European, Scandinavian and Baltic states, these variables were no longer significant once educational attainment was included in the model.

Table 6. Odds ratios for the significant predictors of severe material deprivation across the EU (excluding respondent's educational attainment)

Severe material deprivation (excluding education)	UK	Northern Europe				Scandinavia		Southern Europe			Baltic states			Eastern European		
		FR	AT	BE	NL	DK	SE	IT	PT	ES	EE	LV	LT	BG	HU	PL
Gender																
Male (reference group)																
Female	X	1.44	X	X	X	2.69	3.97	X	X	X	X	X	X	X	1.13	X
Age																
25-29	2.01	X	X	X	X	3.28	X	2.43	1.68	2.10	X	X	1.52	1.24	1.50	1.18
30-39	X	X	X	X	0.34	X	X	1.70	1.96	1.57	X	1.19	1.34	1.24	1.21	X
40-49	X	X	0.63	X	0.51	2.87	X	1.24	1.32	1.40	X	X	1.29	X	1.24	X
50-59 (reference group)																
Father's educational attainment																
None: Unable to read or write	-	-	-	7.38	-	-	-	9.09	-	5.97	-	X	5.40	3.16	1.45	-
Low: ISCED levels 0-2	-	-	-	X	-	-	-	X	-	3.69	1.90	3.50	2.73	2.11	1.33	-
Medium: ISCED levels 3-4	-	-	-	X	-	-	-	X	-	3.21	X	2.30	X	1.45	X	-
High: ISCED levels 5-6 (reference group)																
Mother's educational attainment																
None: Unable to read or write	-	-	-	X	-	-	-	5.57	8.35	12.90	-	5.76	-	3.27	3.83	2.74
Low: ISCED levels 0-2	-	-	-	2.20	-	-	-	X	X	3.80	-	4.53	-	1.99	2.74	2.69
Medium: ISCED levels 3-4	-	-	-	X	-	-	-	X	X	X	-	2.85	-	1.34	1.67	1.52
High: ISCED levels 5-6 (reference group)																
Parents' educational attainment																
None: Unable to read or write	3.54	5.95	-	-	-	-	-	X	-	-	-	X	-	-	-	-
Low: ISCED levels 0-2	1.97	1.70	-	-	-	-	11.24	X	-	-	-	0.35	-	-	-	-
Medium: ISCED levels 3-4	1.82	X	-	-	-	-	X	X	-	-	-	0.47	-	-	-	-
High: ISCED levels 5-6 (reference group)																
Derived country of birth																
Respondent and at least 1 parent born in survey country (reference group)																
Respondent born in survey country; neither parent born in survey country	-	1.62	2.59	2.51	X	-	-	-	-	4.22	2.49	1.39	-	-	-	1.61
Respondent not born in survey country; at least 1 parent born in survey country	-	X	X	X	X	-	-	-	-	X	X	X	-	-	-	X
Neither respondent nor parents born in survey country	-	1.66	3.76	2.44	13.04	-	-	-	-	3.11	X	1.78	-	-	-	X
Presence of parents in the household																
Lived with both parents (reference group)																
Lived with one parent	2.31	1.89	-	-	-	-	-	-	X	-	-	-	2.40	-	X	-
No parents in the household	5.12	3.57	-	-	-	-	-	-	2.08	-	-	-	8.15	-	2.10	-
Number of adults in the household																
1 or less																
1 or less	-	-	-	-	-	24.31	-	1.89	-	5.08	-	-	0.33	2.43	-	-
2 (reference group)																
3 or more	-	-	-	-	-	X	-	1.17	-	1.45	-	-	1.21	X	-	-

Severe material deprivation (excluding education)	UK	Northern Europe				Scandinavia		Southern Europe			Baltic states			Eastern European		
		FR	AT	BE	NL	DK	SE	IT	PT	ES	EE	LV	LT	BG	HU	PL
Number of children in the household																
1 (reference group)																
2	X	X	0.50	-	-	-	-	1.17	X	X	X	X	X	0.86	X	X
3	1.49	X	X	-	-	-	-	1.75	X	X	X	X	0.67	X	1.33	0.82
4 or more	2.61	2.00	X	-	-	-	-	2.25	1.91	1.73	1.50	1.32	0.72	1.50	2.21	X
Number of workers in the household																
No workers	-	-	-	-	-	-	-	X	0.23	-	3.03	X	X	-	2.20	-
1 worker (reference group)																
More than 1 worker	-	-	-	-	-	-	-	0.86	X	-	X	0.62	0.74	-	0.88	-
Father's activity status																
Employed (reference group)																
Unemployed	-	-	-	-	13.45	-	-	2.60	-	X	-	-	-	-	2.30	2.45
Other inactive	-	-	4.51	-	X	-	-	1.44	-	1.67	-	-	-	-	1.37	X
Mother's activity status																
Employed (reference group)																
Unemployed	-	-	-	-	-	-	-	-	-	5.92	-	-	-	-	-	-
Other inactive	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Father's employment status																
Employed in supervisory role (reference group)																
Employed in non-supervisory role	1.32	-	-	-	-	-	-	-	-	-	1.49	-	-	-	-	-
Unemployed	2.59	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-
Other inactive	X	-	-	-	-	-	-	-	-	-	2.62	-	-	-	-	-
Mother's employment status																
Employed in supervisory role (reference group)																
Employed in non-supervisory role	X	-	-	-	-	-	-	0.63	-	-	-	1.36	-	1.60	-	1.45
Unemployed	2.89	-	-	-	-	-	-	X	-	-	-	3.58	-	X	-	2.37
Other inactive	2.00	-	-	-	-	-	-	X	-	-	-	X	-	X	-	1.54
Financial situation																
Bad/very bad	1.42	-	2.17	4.38	X	-	-	2.54	1.81	2.56	X	-	-	1.61	1.56	2.21
Moderately bad	X	-	X	2.00	X	-	-	1.49	X	1.45	1.52	-	-	X	X	1.53
Moderately good (reference group)																
Good/very good	X	-	X	X	X	-	-	X	X	X	0.67	-	-	X	1.30	0.86
Ability to make ends meet																
Difficult/very difficult	-	-	-	-	-	-	-	-	2.87	-	-	1.53	2.10	1.55	1.66	-
Fairly difficult	-	-	-	-	-	-	-	-	1.78	-	-	1.54	X	X	1.18	-
Fairly easy (reference group)																
Easy/very easy	-	-	-	-	-	-	-	-	X	-	-	X	X	0.78	X	-

Table 7. Odds ratios for the significant predictors of severe material deprivation across the EU (controlling for respondent's educational attainment)

Severe material deprivation	UK	Northern Europe				Scandinavia		Southern Europe			Baltic states			Eastern European		
		FR	AT	BE	NL	DK	SE	IT	PT	ES	EE	LV	LT	BG	HU	PL
Gender																
Male (reference group)																
Female	X	1.45	X	X	X	2.93	5.50	1.13	X	X	X	1.27	1.23	X	1.15	1.10
Age																
25-29	2.63	1.83	X	X	X	5.47	X	2.93	1.88	2.46	0.63	0.76	1.47	1.03	1.50	1.43
30-39	1.57	1.53	1.60	X	0.38	X	X	1.91	1.98	1.91	X	X	X	X	1.18	X
40-49	1.43	X	X	X	X	3.63	X	1.27	X	1.58	X	X	1.25	X	1.26	X
50-59 (reference group)																
Educational attainment																
Low: ISCED levels 0-2	11.33	6.02	9.48	6.23	5.02	8.19	46.87	4.79	5.70	4.11	8.10	7.13	4.20	6.26	7.91	12.31
Medium: ISCED levels 3-4	3.33	2.58	2.98	2.44	2.29	3.12	7.42	1.82	2.86	2.14	3.06	2.75	2.63	2.51	3.09	5.11
High: ISCED levels 5-6 (reference group)																
Father's educational attainment																
None: Unable to read or write	-	-	-	-	-	-	-	5.49	-	3.69	-	7.57	3.01	2.48	-	-
Low: ISCED levels 0-2	-	-	-	-	-	-	-	X	-	2.24	-	1.67	1.69	1.72	-	-
Medium: ISCED levels 3-4	-	-	-	-	-	-	-	X	-	2.57	-	1.31	X	1.24	-	-
High: ISCED levels 5-6 (reference group)																
Mother's educational attainment																
None: Unable to read or write	-	-	-	-	-	-	-	3.72	X	7.26	-	-	-	-	3.10	X
Low: ISCED levels 0-2	-	-	-	-	-	-	-	X	X	X	-	-	-	-	2.10	1.37
Medium: ISCED levels 3-4	-	-	-	-	-	-	-	X	X	X	-	-	-	-	1.65	X
High: ISCED levels 5-6 (reference group)																
Parents' educational attainment																
None: Unable to read or write	-	2.71	-	-	-	-	-	X	-	-	-	-	-	-	X	-
Low: ISCED levels 0-2	-	X	-	-	-	-	-	X	-	-	-	-	-	-	X	-
Medium: ISCED levels 3-4	-	X	-	-	-	-	-	X	-	-	-	-	-	-	0.74	-
High: ISCED levels 5-6 (reference group)																
Derived country of birth																
Respondent and at least 1 parent born in survey country (reference group)																
Respondent born in survey country; neither parent born in survey country	-	1.66	2.01	3.24	X	-	-	-	-	3.92	2.40	1.39	-	-	-	1.84
Respondent not born in survey country; at least 1 parent born in survey country	-	X	X	X	X	-	-	-	-	X	X	X	-	-	-	X
Neither respondent nor parents born in survey country	-	1.79	2.59	2.23	11.70	-	-	-	-	3.74	X	1.60	-	-	-	X
Presence of parents in the household																
Lived with both parents (reference group)																
Lived with one parent	2.34	1.55	-	-	-	-	-	-	X	-	-	-	2.40	-	-	-
No parents in the household	3.76	2.64	-	-	-	-	-	-	2.07	-	-	-	8.22	-	-	-

Severe material deprivation	UK	Northern Europe				Scandinavia		Southern Europe			Baltic states			Eastern European		
		FR	AT	BE	NL	DK	SE	IT	PT	ES	EE	LV	LT	BG	HU	PL
Number of adults in the household																
1 or less	-	-	-	-	-	28.32	-	1.98	-	4.59	-	X	0.35	2.62	-	-
2 (reference group)																
3 or more	-	-	-	-	-	X	-	X	-	1.41	-	0.77	X	X	-	-
Number of children in the household																
1 (reference group)																
2	X	X	0.52	-	-	-	-	X	X	X	-	-	X	0.83	X	X
3	1.47	X	X	-	-	-	-	1.57	X	X	-	-	0.62	0.81	1.17	0.78
4 or more	2.12	1.64	X	-	-	-	-	1.83	1.85	1.48	-	-	0.62	X	1.57	X
Number of workers in the household																
No workers	-	-	-	-	-	-	-	X	-	-	3.09	X	X	-	2.28	X
1 worker (reference group)																
More than 1 worker	-	-	-	-	-	-	-	0.81	-	-	X	0.62	0.75	-	X	0.86
Father's activity status																
Employed (reference group)																
Unemployed	-	-	-	-	19.25	-	-	2.58	-	-	-	-	-	-	X	2.42
Other inactive	-	-	3.67	-	X	-	-	1.46	-	-	-	-	-	-	1.31	X
Mother's activity status																
Employed (reference group)																
Unemployed	-	-	-	-	-	-	-	-	-	6.53	-	-	-	-	-	-
Other inactive	-	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	-
Father's employment status																
Employed in supervisory role (reference group)																
Employed in non-supervisory role	X	-	-	-	-	-	-	-	-	-	1.43	-	-	-	-	-
Unemployed	1.94	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-
Other inactive	X	-	-	-	-	-	-	-	-	-	2.64	-	-	-	-	-
Mother's employment status																
Employed in supervisory role (reference group)																
Employed in non-supervisory role	X	-	-	-	-	-	-	0.59	-	-	-	1.39	-	1.51	-	-
Unemployed	2.43	-	-	-	-	-	-	X	-	-	-	2.82	-	X	-	-
Other inactive	X	-	-	-	-	-	-	0.72	-	-	-	X	-	X	-	-
Financial situation																
Bad/very bad	-	-	1.75	3.82	-	-	-	2.10	1.61	-	X	-	-	1.55	1.39	1.96
Moderately bad	-	-	X	1.82	-	-	-	1.32	X	-	1.44	-	-	X	X	1.42
Moderately good (reference group)																
Good/very good	-	-	X	X	-	-	-	X	X	-	0.68	-	-	1.09	1.31	X
Ability to make ends meet																
Difficult/very difficult	-	-	-	-	-	-	-	-	2.57	1.96	-	1.59	1.95	1.49	1.63	-
Fairly difficult	-	-	-	-	-	-	-	-	1.70	X	-	1.57	X	X	1.18	-
Fairly easy (reference group)																
Easy/very easy	-	-	-	-	-	-	-	-	X	X	-	X	X	0.78	X	-

4.3 Severe material deprivation

Similar patterns emerge when considering the results of the deprivation models in Tables 6 and 7. Again, parental education is generally the most important predictor in the absence of the respondent's own educational level, but once the latter is included it becomes the most important predictor. Parental education persists as a predictor after controlling for the respondent's education in fewer countries compared with the poverty model (generally in Southern and Eastern Europe and the Baltic States), but in those where it does persist, its magnitude is generally reduced.

Household composition during childhood is again of importance even when controlling for the respondent's educational outcome, though generally the impacts are slightly reduced when education is included.

Before taking account of the respondents' educational attainment, one or both of the subjective childhood income variables are significant predictors for nearly all the countries except Scandinavia, France and the Netherlands. As with poverty, these childhood household income variables remain in the models once education is controlled for in the Southern and Eastern European countries. In addition, these variables also persist as predictors of severe material deprivation after accounting for educational attainment in the Baltic States, Austria and Belgium.

Perhaps unexpectedly, the largest relative impact of educational attainment on severe material deprivation is evident for Sweden, with a respondent 47 times more likely to be severely materially deprived if they have a low educational level compared to a high one. The results for Sweden should be interpreted with considerable caution though due to the very small number of respondents in the sample experiencing severe material deprivation. Odds ratios for the remaining EU countries for this category range from 4.2 to 12.3 times, so are considerably lower.

5. DISCUSSION

5.1 Predictors of future life chances in the UK

The results from the analysis of the UK data are generally consistent with much of the published research on intergenerational transmission of disadvantages. Many of the childhood factors previously identified in the literature as impacting on a child's outcomes are significant predictors of one or more of the three measures of future life chances investigated here, educational outcomes, poverty and severe material deprivation.

Overall the results have shown some clear differences in the predictors of the different measures of future life chances. While variables relating to the household composition during childhood were important predictors of educational outcomes and severe material deprivation, they were not as good at predicting poverty as variables related to the economic status of the household⁵. This can be explained by the fact that relative income poverty and severe material deprivation, which is a more absolute measure of social exclusion, are

⁵ although this was not the case for the majority of the other EU member states

capturing different aspects of disadvantage, highlighted by the differing at-risk-of-poverty and severe material deprivation rates in the UK (16.2% and 7.8% in 2012 according to EU-SILC), along with the relatively low degree of overlap in the people experiencing them (Webber & Tonkin, 2013).

The present analysis is consistent with the conclusion that children's educational attainment is the most important factor in explaining intergenerational mobility in the UK (HM Government, 2014). It was the most important predictor in the models for both poverty and severe material deprivation and including it in the modelling process improved the fit of the models. There was also some evidence that the relationship between some of the childhood factors and future disadvantage may be at least partly explained by educational attainment. This was particularly the case for the income poverty model where including educational outcomes resulted in three of the childhood factors associated with poverty (financial situation of household, ability to make ends meet and mother's activity status) falling out of the model, as well as a reduction in the odds ratio for some other explanatory variables. Similarly, the severe material deprivation models suggest that parental education impacts on current deprivation status through influencing the educational outcomes of the child.

For the UK, neither of the two subjective variables that indicated income status during childhood remained in the final models for poverty or deprivation once the respondent's educational attainment was accounted for. Whilst the obvious limitations of using subjective variables such as this do need to be acknowledged, this is consistent with previous research indicating that income in and of itself is not the primary driver of poverty persisting through the generations (Blanden & Gibbons, 2006). The results of this study also indicate that the ability to make ends meet does have an impact on the child's educational outcome. Taken together, this provides further evidence to suggest that household income during childhood impacts future life chances through the educational attainment of the child. It has been suggested the transmission acts through parents investing in their children through the home environment (home learning activities, health and nutrition) and providing financial capital for schooling (UK Government, 2014).

Amongst the childhood factors examined, whilst several of them are no longer significant when educational attainment is included in the model, this is not the case for all the factors. In many cases, these factors continued to predict the level of disadvantage experienced in adulthood, though the odds ratios associated with them were reduced. For example, in the case of income poverty, both parental qualifications and living in a workless household at age 14 remained predictors even after accounting for the respondent's own level of education. This suggests that they may be having an impact through alternative mechanisms.

Previous research has suggested that while both maternal and paternal qualifications are both important influences on children's educational attainment, it is maternal qualifications that appear to have the largest influence. However, the current research suggests that, holding all else equal, it is the level of qualifications of the father that has the largest influence on the odds of a low educational outcome. It has, however, previously been noted that the relative size of such effects can vary according to the research methods used and the area of the education distribution examined (UK Government, 2014).

5.2 Comparisons with other EU countries

The models for the other EU countries suggest that the intergenerational transmission of disadvantage is an issue across all the countries examined, though the scale of the challenge varies considerably. Similarly, looking at the specific predictors of future life chances across the different EU member states suggests that while there are certain childhood factors that are important for all (or nearly all), there are also some clear patterns across different geographical areas of the EU, which may reflect differences in the nature of the welfare regimes in these countries (Fenger, 2007).

Looking at the results for the two Scandinavian countries included in this research, the relative lack of predictors in all of the models for the Danish data generally supports the assertion that Denmark has one of the highest levels of intergenerational mobility in the EU (Corak, 2006). The results for Denmark suggest that, from amongst the childhood factors considered in this analysis, the relative likelihoods of poverty and severe material deprivation in adulthood are almost entirely dependent on the educational attainment of an individual, and that this is itself broadly independent of many of the childhood factors associated with disadvantage. Although the Danish results showed some evidence of intergenerational transmission of education level, this was lower than for many of the other member states. Similarly the Swedish results are consistent with the characterisation of Sweden as having high intergenerational mobility though not as high as other Scandinavian countries (Corak, 2006). In neither Scandinavian country was either subjective income variable a significant predictor of any of the future life chances, again consistent with countries with a high degree of intergenerational mobility.

The results provide evidence for the intergenerational transmission of educational attainment across the EU, with the results showing that parental education is the most important predictor of the child's educational outcomes across Europe. However, the extent of this transmission varies and is highest for the Southern European countries as well some Eastern European countries and Baltic States. D'Addio (2007) reviewing the literature on the intergenerational transmission of education concludes that the degree of educational persistence is determined by the interaction between parental characteristics and the country's institutions, the educational systems and the nature of the labour market; if the benefits from education are low, those with a low level of education in a low income family may not feel the investment in education is justified.

The analysis found that the impact of the mother's educational attainment was generally higher for most of the other EU countries studied. This is consistent with the findings of Field (2010) who found that overall the mother's education level has the greatest impact, but not with the UK results from the current study which, as discussed above, suggest that low paternal qualifications have the biggest impact on the likelihood of low educational attainment.

Beyond parental qualifications, the almost universal significance of one or other of the subjective income variables in predicting education clearly provides evidence of the importance of income on educational achievements in almost all the countries across the EU, showing that the pattern of low income children failing to perform well in education is

certainly not limited to the UK. One childhood predictor of educational attainment that was particularly strong in the UK compared with other countries was the mother's employment/activity status, with those whose mother was unemployed or inactive 3 times as likely to have low educational outcomes compared with those whose mother was in a managerial role, holding all else equal.

A number of the features of the UK models were also evident in the models of poverty and deprivation for the other EU countries. When included in the models, educational attainment was the most important predictor of future life chances across the entire geographical range and for all outcomes. Parental education was generally the most important predictor of these outcomes when the respondent's education level was not controlled for and, in these models, at least one of the subjective income variables was generally of importance (except in Denmark, Sweden and the Netherlands).

The persistence of the subjective income variables as predictors after controlling for educational attainment in the models of poverty and severe material deprivation for the Southern and Eastern European countries and severe material deprivation for the Baltic States reveals that for these countries income is a significant predictor of future disadvantage in and of itself, and does not operate entirely through educational outcomes. This is consistent with the assertions that income is an important predictor of future life chances (d'Addio, 2007).

There is a difference between the UK poverty models and the poverty models for the remaining member states in terms of the relative importance of household composition and worklessness. For example, living in a workless household during childhood is identified as a predictor in the final UK poverty model but was only included in the model for one other country. The UK finding is consistent with previous research using cohort study data on the intergenerational transmission of worklessness in the UK (Macmillan, 2010), though it should be noted that no evidence for a causal relationship was found.

5.3 Limitations

This analysis was based on retrospective recall of various childhood characteristics, most notably a subjective assessment of the income of the household during childhood. This reliance on the respondent's recall of key variables of interest, particularly income, has the disadvantage that it may be inaccurate (Jenkins & Siedler, 2007b). Although the results relating to income data are generally consistent with other findings, it is important to recognise that the income data used in this analysis falls short of the ideal stipulated for the analysis of intergenerational transmission of disadvantage (Jenkins & Siedler, 2007b). Studies where parental income was identified as an important factor in future life chances were based on objective measures of poverty collected at the time (e.g. Blanden & Gibbons, 2006). However, using an absolute value for income is also not without problems; income tends to vary with age group and is subject to short-term fluctuations (Corak, 2006).

It is also important to note the limitation of using data which is based on a point in time. This analysis used childhood characteristics when the respondent was a teenager, but research suggests that much of the impact of childhood factors has already happened by this point, and that children's life chances are shaped most in the first five years of their lives (Field,

2010). Income and broader circumstances vary over time so using a single year on which to base the childhood factors also has limitations (Jenkins & Siedler, 2007a). A study in the US found that average family income tends to be higher in later childhood compared to earlier childhood, and that only a minority of families with low incomes in early childhood, still had low incomes in adolescence (Duncan et al, 1998). This same study also found that family income in early childhood has a larger impact on completed schooling than later in childhood, suggesting that by measuring income in later childhood, this analysis may be missing the critical period in which income might impact on educational outcomes and maybe the other future life chances. Similarly a study in Norway found that the longer a mother was in employment, the higher the educational achievement of the children, so persistent employment was the key factor (Ermisch and Pronzato, 1998). Clearly it would be unrealistic to expect respondents to provide retrospective information on a period from early childhood or even for a period of time between early childhood and adolescence, so taking age 14 as the reference point remains a sensible approach. Furthermore, it should be noted that many of the key variables relating to parental characteristics are unlikely to change significantly over the course of childhood, e.g. parental education and household composition.

In addition to the childhood characteristics relating to a single point in time, the outcomes being predicted are also based on the situation at the time the survey was completed. Recent evidence indicates that while poverty rates as a whole remain fairly static within a country, the people experiencing poverty change and it is chronic or persistent poverty that is most associated with future adult poverty (HM Government, 2014). This introduces the possibility that some of the respondents experiencing poverty or severe material deprivation at the time of the 2011 data collection may well not have been experiencing poverty in an earlier or later year, although their childhood characteristics would remain the same. Investigating the childhood factors predicting persistent poverty may therefore prove to be a valuable area for future research using this EU-SILC dataset.

Despite these potential limitations, the 2011 EU-SILC module provides an important new source of evidence for research on intergenerational disadvantage, in particular providing data that is both relatively up to date and broadly comparable across a range of countries.

Finally, it should be noted that various studies have identified a number of other factors important in the intergenerational transmission of disadvantages that did not form part of this analysis. These include inherited genetic ability (Field, 2010), the quality and nature of early childcare (Bird, 2007) and the nature of the home environment more broadly (Field 2010). Identifying suitable variables in a retrospective survey to capture these additional factors is problematic, but it should be remembered that this research as with any using multivariate regression techniques, is limited by the variables available and there are likely to be numerous potential explanatory variables that are not accounted for within the analysis.

Overall the results support the view that educational attainment is the most important predictor of poverty and material deprivation in adulthood in the UK and other countries. However, the findings also highlight that other factors also appear to have an impact on future life chances, either directly or indirectly.

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7. ANNEXES

Annex 1: Additional variables collected in 2011 EU-SILC module on intergenerational transmission of disadvantages.

Variable	Description
PT010	Presence of parents
1	Lived with both parents
2	Lived with father only
3	Lived with mother only
4	Lived in a private household without any parents
5	Lived in a collective household or institution
PT020	Number of adults
	0-99
PT030	Number of children
	0-99
PT040	Number of persons in the household in work
	0-99
PT050	Year of birth of father
	0-99
PT060	Country of birth of father
1	Born in the respondent's present country of residence (i.e. survey country)
2	Born in another EU-27 country
3	Born in another European country
4	Born outside Europe
PT070	Citizenship of father
1	The respondent's present country of residence (i.e. survey country)
2	Another EU-27 country
3	Another European country
4	Outside Europe
PT080	Year of birth of mother
	0-99
PT090	Country of birth of mother
1	Born in the respondent's present country of residence (i.e. survey country)
2	Born in another EU-27 country
3	Born in another European country
4	Born outside Europe
PT100	Citizenship of mother
1	The respondent's present country of residence (i.e. survey country)
2	Another EU-27 country
3	Another European country
4	Outside Europe

Variable	Description
PT110	Highest level of education attained by the father
0	Father could neither read nor write
1	Low level (pre-primary, primary or lower secondary)
2	Medium level (upper secondary education and post-secondary non-tertiary education)
3	High level (first stage of tertiary education and second stage of tertiary education)
PT120	Highest level of education attained by the mother
0	Mother could neither read nor write
1	Low level (pre-primary, primary or lower secondary)
2	Medium level (upper secondary education and post-secondary non-tertiary education)
3	High level (first stage of tertiary education and second stage of tertiary education)
PT130	Activity status of the father
1	Employed
2	Self-employed (including family worker)
3	Unemployed
4	In retirement or in early retirement or had given up business
5	Fulfilling domestic tasks and care responsibilities
6	Other inactive person
PT140	Managerial position of the father
1	Supervisory
2	Non-supervisory
PT150	Main occupation of the father
	ISCO-08 (COM) code (1 digit)
PT160	Activity status of the mother
1	Employed
2	Self-employed (including family worker)
3	Unemployed
4	In retirement or in early retirement or had given up business
5	Fulfilling domestic tasks and care responsibilities
6	Other inactive person
PT170	Managerial position of the mother
1	Supervisory
2	Non-supervisory
PT180	Main occupation of the mother
	ISCO-08 (COM) code (1 digit)
PT190	Financial situation of the household
1	Very bad
2	Bad
3	Moderately bad
4	Moderately good
5	Good
6	Very good

Variable	Description
PT200	Ability to make ends meet
1	With great difficulty
2	With difficulty
3	With some difficulty
4	Fairly easily
5	Easily
6	Very easily
PT210	Tenancy status
1	Owner
2	Tenant
3	Accommodation was provided free

Annex 2: Derived variables used in the analysis.

Derived variable	Original variable	
Gender	PB150	Sex
Male	1	Male
Female	2	Female
Age group	RX010	Age
25-29	0-99	
30-39		
40-49		
50-59		
Poverty	HX080	
Not at risk of poverty	0	Equivalised disposable income >= 60% of median
At risk of poverty	1	Equivalised disposable income < 60% of median
Severe material deprivation	RX060	
Not severely materially deprived	0	Not severely materially deprived
Severely materially deprived	1	Severely materially deprived
Respondent's education level - outcome	PE040	Highest ISCED level attained
Low - educated to ISCED level 2 and below	0	Pre-primary education
	1	Primary education
	2	Lower secondary education
High - educated to ISCED level 3 and above	3	(Upper) secondary education
	4	Post-secondary non-tertiary education
	5	First stage of tertiary education (not leading directly to an advanced research qualification)
	6	Second stage of tertiary education (leading to an advanced research qualification)
Respondent's education level	PE040	Highest ISCED level attained
Educated to ISCED level 2 and below	0	Pre-primary education
	1	Primary education
	2	Lower secondary education
Educated to ISCED levels 3 or 4	3	(Upper) secondary education
	4	Post-secondary non-tertiary education
Educated to above ISCED level 4	5	First stage of tertiary education (not leading directly to an advanced research qualification)
	6	Second stage of tertiary education (leading to an advanced research qualification)
Father's education level	PT110	Highest level of education attained by the father
Father could neither read nor write	0	Father could neither read nor write
Low - maximum ISCED level 2	1	Low level (pre-primary, primary or lower secondary)
Medium - ISCED levels 3 or 4	2	Medium level (upper secondary education and post-secondary non-tertiary education)
High - ISCED level 5 and above	3	High level (first stage of tertiary education and second stage of tertiary education)

Derived variable	Original variable	
Mother's education level	PT120	Highest level of education attained by the mother
Mother could neither read nor write	0	Mother could neither read nor write
Low - maximum ISCED level 2	1	Low level (pre-primary, primary or lower secondary)
Medium - ISCED levels 3 or 4	2	Medium level (upper secondary education and post-secondary non-tertiary education)
High - ISCED level 5 and above	3	High level (first stage of tertiary education and second stage of tertiary education)
Parental education level	PT110/PT120	
Neither parent able to read/write	≤ 0 +/ ≤ 0	
Maximum low educational level achieved by either parent	≤ 1 +/ ≤ 1	
Maximum medium educational level achieved by either parent	≤ 2 +/ ≤ 2	
At least 1 parent educated to high level	≤ 3 +/ ≤ 3	
Combined family country of birth		
Self and at least 1 parent born in survey country		
Born in survey country but neither parent		
Self born outside but at least 1 parent born in the survey country		
None born in survey country		
Presence of parents	PT010	Presence of parents
Lived with both parents	1	Lived with both parents
Lived with one parent	2	Lived with father only
	3	Lived with mother only
Didn't live with any parents	4	Lived in a private household without any parents
	5	Lived in a collective household or institution
Number of adults	PT020	Number of adults
1 adult or less		0-99
2 adults		
3 or more adults		
Number of children	PT030	Number of children
1 child		0-99
2 children		
3 children		
4 or more children		
Number of workers	PT040	Number of persons in the household in work
No workers		0-99
1 worker		
2 or more workers		
Father's activity status	PT130	Activity status of the father
In employment	1	Employed
	2	Self-employed (including family worker)
Unemployed	3	Unemployed
Economically inactive - not unemployed	4	In retirement or in early retirement or had given up business
	5	Fulfilling domestic tasks and care responsibilities
	6	Other inactive person

Derived variable	Original variable			
Mother's activity status	PT160	Activity status of the mother		
In employment	1	Employed		
	2	Self-employed (including family worker)		
Unemployed	3	Unemployed		
Economically inactive - not unemployed	4	In retirement or in early retirement or had given up business		
	5	Fulfilling domestic tasks and care responsibilities		
	6	Other inactive person		
Father's employment status		Father's activity status	PT140	Managerial position of the father
Employed in supervisory role	1	In employment	1	Supervisory
Employed in non-supervisory role			2	Non-supervisory
Unemployed	2	Unemployed		
Inactive	3	Economically inactive		
Mother's employment status		Mother's activity status	PT170	Managerial position of the mother
Employed in supervisory role	1	In employment	1	Supervisory
Employed in non-supervisory role			2	Non-supervisory
Unemployed	2	Unemployed		
Inactive	3	Economically inactive		
Financial situation of the household	PT190	Financial situation of the household		
Bad	1	Very bad		
	2	Bad		
Moderately bad	3	Moderately bad		
Moderately good	4	Moderately good		
Good	5	Good		
	6	Very good		
Ability to make ends meet	PT200	Ability to make ends meet		
Difficult	1	With great difficulty		
	2	With difficulty		
Moderately difficult	3	With some difficulty		
Moderately easy	4	Fairly easily		
Easy	5	Easily		
	6	Very easily		

Annex 3: Logistic regression outputs for UK models

a) Educational outcome model

Parameter	Estimate	Standard error	Wald Chi-Square	Pr>Chisq	Odds ratio	95% Wald confidence limits	
Intercept	-6.3441	0.5674	125.0213	<.0001	0.002		
Female	0.0833	0.1042	0.6388	0.4241	1.087	0.886	1.333
Aged 25-29	-1.4353	0.2904	24.4246	<.0001	0.238	0.135	0.421
Aged 30-39	-0.972	0.1532	40.264	<.0001	0.378	0.280	0.511
Aged 40-49	-0.689	0.1199	33.0026	<.0001	0.502	0.397	0.635
Father's education: low	2.7321	0.5209	27.5141	<.0001	15.365	5.536	42.647
Father's education: medium	2.008	0.3979	25.4729	<.0001	7.449	3.415	16.246
Father's education: high	1.106	0.4146	7.1141	0.0076	3.022	1.341	6.812
Mother's education: low	1.0858	0.4659	5.4311	0.0198	2.962	1.188	7.381
Mother's education: medium	1.0338	0.3363	9.45	0.0021	2.812	1.455	5.436
Mother's education: high	-0.3213	0.4877	0.434	0.51	0.725	0.279	1.886
1 adult or less	0.4786	0.2179	4.8233	0.0281	1.614	1.053	2.474
3 or more adults	0.6212	0.1142	29.5882	<.0001	1.861	1.488	2.328
2 children	0.1107	0.1448	0.5836	0.4449	1.117	0.841	1.484
3 children	0.3387	0.1582	4.5844	0.0323	1.403	1.029	1.913
4 or more children	0.906	0.1547	34.2844	<.0001	2.474	1.827	3.351
Father employed in non-supervisory role	0.4944	0.1316	14.1196	0.0002	1.639	1.267	2.122
Father unemployed	1.1129	0.2643	17.7277	<.0001	3.043	1.813	5.109
Father inactive	0.1617	0.3579	0.204	0.6515	1.175	0.583	2.370
Mother employed in non-supervisory role	0.9525	0.3203	8.8446	0.0029	2.592	1.384	4.856
Mother unemployed	1.1656	0.354	10.8386	0.001	3.208	1.603	6.420
Mother inactive	1.1531	0.3259	12.5212	0.0004	3.168	1.673	6.000
Difficulty/great difficulty making ends meet	0.3567	0.1512	5.5647	0.0183	1.429	1.062	1.921
Moderate difficulty making ends meet	-0.0842	0.1301	0.4188	0.5175	0.919	0.712	1.186
Easy/very easy to make ends meet	0.0362	0.1753	0.0427	0.8363	1.037	0.735	1.462

b) Poverty without controlling for the respondent's educational outcomes

Parameter	Estimate	Standard error	Wald Chi-Square	Pr>Chisq	Odds ratio	95% Wald confidence limits	
Intercept	-2.6721	0.1839	211.198	<.0001	0.069		
Female	0.2003	0.0838	5.7149	0.0168	1.222	1.037	1.44
Aged 25-29	-0.0897	0.1545	0.337	0.5616	0.914	0.675	1.237
Aged 30-39	-0.3018	0.1116	7.321	0.0068	0.739	0.594	0.92
Aged 40-49	-0.2986	0.1008	8.7798	0.003	0.742	0.609	0.904
Self and no parents UK born	0.1538	0.2234	0.4741	0.4911	1.166	0.753	1.807
Self not UK born; at least 1 parent UK born	-0.2389	0.3551	0.4526	0.5011	0.788	0.393	1.579
Neither self nor parents born in UK	0.9455	0.256	13.6434	0.0002	2.574	1.559	4.251
Parental education: none	1.5253	0.343	19.7757	<.0001	4.597	2.347	9.003
Parental education: low	0.7067	0.125	31.9793	<.0001	2.027	1.587	2.59
Parental education: medium	0.3202	0.142	5.0838	0.0242	1.377	1.043	1.819
No workers	0.6679	0.2023	10.9015	0.001	1.95	1.312	2.899
2 or more workers	-0.0336	0.108	0.0971	0.7554	0.967	0.783	1.195
Mother unemployed	0.1645	0.1604	1.0517	0.3051	1.179	0.861	1.614
Mother inactive	0.2515	0.1057	5.661	0.0173	1.286	1.045	1.582
Bad/very bad financial situation	-0.0979	0.2003	0.2391	0.6249	0.907	0.612	1.343
Moderately bad financial situation	-0.2583	0.1451	3.1702	0.075	0.772	0.581	1.026
Good/very good financial situation	0.1573	0.1228	1.6401	0.2003	1.17	0.92	1.489
Difficulty/great difficulty making ends meet	0.4624	0.1888	6.0005	0.0143	1.588	1.097	2.299
Moderate difficulty making ends meet	0.0797	0.1182	0.4548	0.5001	1.083	0.859	1.365
Easy/very easy to make ends meet	0.2106	0.1348	2.4393	0.1183	1.234	0.948	1.608

c) Poverty controlling for the respondent's educational outcomes

Parameter	Estimate	Standard error	Wald Chi-Square	Pr>Chisq	Odds ratio	95% Wald confidence limits	
Intercept	-2.7291	0.1584	296.6921	<.0001	0.065		
Female	0.2004	0.0842	5.6641	0.0173	1.222	1.036	1.441
Aged 25-29	0.1245	0.1533	0.6595	0.4167	1.133	0.839	1.529
Aged 30-39	-0.1617	0.1129	2.0542	0.1518	0.851	0.682	1.061
Aged 40-49	-0.2141	0.1021	4.4003	0.0359	0.807	0.661	0.986
Low level of education	1.5835	0.1344	138.7979	<.0001	4.872	3.744	6.34
Medium level of education	0.7349	0.1029	50.9555	<.0001	2.085	1.704	2.551
Parental education: none	0.8238	0.3574	5.3118	0.0212	2.279	1.131	4.592
Parental education: low	0.2802	0.1274	4.84	0.0278	1.323	1.031	1.699
Parental education: medium	0.0982	0.1432	0.4701	0.493	1.103	0.833	1.461
Self and no parents UK born	0.3842	0.2186	3.0888	0.0788	1.468	0.957	2.254
Self not UK born; at least 1 parent UK born	-0.207	0.3572	0.3358	0.5623	0.813	0.404	1.638
Neither self nor parents born in UK	1.1017	0.2584	18.1753	<.0001	3.009	1.813	4.994
No workers	0.4272	0.1988	4.6188	0.0316	1.533	1.038	2.263
2 or more workers	-0.1891	0.0935	4.0845	0.0433	0.828	0.689	0.994

d) Severe material deprivation without controlling for the respondent's educational outcomes

Parameter	Estimate	Standard error	Wald Chi-Square	Pr>Chisq	Odds ratio	95% Wald confidence limits	
Intercept	-5.1402	0.4265	145.279	<.0001	0.006		
Female	-0.0466	0.139	0.1123	0.7375	0.954	0.727	1.253
Aged 25-29	0.697	0.2409	8.3718	0.0038	2.008	1.252	3.219
Aged 30-39	0.2317	0.1946	1.4181	0.2337	1.261	0.861	1.846
Aged 40-49	0.1719	0.1783	0.9299	0.3349	1.188	0.837	1.684
Parental education: none	1.2651	0.5295	5.7084	0.0169	3.543	1.255	10.003
Parental education: low	0.677	0.2415	7.8582	0.0051	1.968	1.226	3.159
Parental education: medium	0.5972	0.2588	5.3266	0.021	1.817	1.094	3.017
Lived with one parent	0.8377	0.1762	22.6097	<.0001	2.311	1.636	3.264
Lived with no parents	1.6329	0.4818	11.4863	0.0007	5.119	1.991	13.161
2 children	0.1319	0.2024	0.4246	0.5146	1.141	0.767	1.697
3 children	0.3964	0.2174	3.3255	0.0682	1.486	0.971	2.276
4 or more children	0.9603	0.2096	20.9896	<.0001	2.612	1.732	3.94
Father employed in non-supervisory role	0.2797	0.1693	2.7304	0.0985	1.323	0.949	1.843
Father unemployed	0.9523	0.3071	9.6135	0.0019	2.592	1.42	4.732
Father inactive	0.3107	0.4285	0.5257	0.4684	1.364	0.589	3.16
Mother employed in non-supervisory role	0.4624	0.3259	2.0136	0.1559	1.588	0.838	3.008
Mother unemployed	1.0604	0.3674	8.332	0.0039	2.887	1.405	5.932
Mother inactive	0.6909	0.3375	4.192	0.0406	1.996	1.03	3.866
Bad/very bad financial situation	0.3484	0.2114	2.716	0.0993	1.417	0.936	2.144
Moderately bad financial situation	0.0979	0.1933	0.2567	0.6124	1.103	0.755	1.611
Good/very good financial situation	-0.1222	0.1888	0.419	0.5174	0.885	0.611	1.281

e) Severe material deprivation controlling for the respondent's educational outcomes

Parameter	Estimate	Standard error	Wald Chi-Square	Pr>Chisq	Odds ratio	95% Wald confidence limits	
Intercept	-5.4707	0.3844	202.5785	<.0001	0.004		
Female	-0.0155	0.1383	0.0125	0.9109	0.985	0.751	1.291
Aged 25-29	0.9685	0.2452	15.6057	<.0001	2.634	1.629	4.259
Aged 30-39	0.4501	0.1969	5.2255	0.0223	1.569	1.066	2.307
Aged 40-49	0.3589	0.1792	4.0123	0.0452	1.432	1.008	2.034
Low level of education	2.4274	0.2334	108.1894	<.0001	11.329	7.171	17.9
Medium level of education	1.2031	0.2051	34.3965	<.0001	3.331	2.228	4.979
Lived with one parent	0.8512	0.169	25.3637	<.0001	2.342	1.682	3.262
Lived with no parents	1.3252	0.4887	7.3532	0.0067	3.763	1.444	9.807
2 children	0.2245	0.197	1.2993	0.2543	1.252	0.851	1.842
3 children	0.3838	0.214	3.215	0.073	1.468	0.965	2.233
4 or more children	0.7494	0.2091	12.8445	0.0003	2.116	1.404	3.187
Father employed in non-supervisory role	0.1298	0.1608	0.6513	0.4196	1.139	0.831	1.561
Father unemployed	0.6617	0.2993	4.8886	0.027	1.938	1.078	3.484
Father inactive	0.2369	0.4354	0.296	0.5864	1.267	0.54	2.975
Mother employed in non-supervisory role	0.2484	0.2952	0.7078	0.4002	1.282	0.719	2.287
Mother unemployed	0.8883	0.337	6.9469	0.0084	2.431	1.256	4.706
Mother inactive	0.4363	0.309	1.9941	0.1579	1.547	0.844	2.834