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Intergenerational transmission of education: Evidence from the World War II cohorts in Europe*

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Abstract

The negative long-term effects of World War II on those directly exposed to it are well documented, but there is no evidence whether these effects extended to subsequent generations. Our paper aims to fill this gap by analyzing the intergenerational effects of World War II in terms of educational attainments. We focus on parent-children dyads in which parents were born between 1926 and 1949, and show two things. First, parents who suffered the war, that is, were exposed to major war events or personally experienced war-related hardship, ended up with less schooling than parents with similar characteristics who did not. Second, the children of parents who suffered the war have lower educational attainments than the children of parents with similar characteristics who did not suffer the war. Our reduced form results allow us to derive instrumental variables estimates of the coefficient of intergeneration transmission of education, which show that the effect of parental education is stronger for mothers than for fathers. They also show that the mother's education matters more for daughters than for sons.

Key words: Education; intergenerational effects; war; conflict; hunger; hardship; World War II; Europe; SHARE.

JEL codes: I0, J24, J3

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1 Introduction

World War II (WW2) was the deadliest conflict in history, with around 70 million casualties (Beevor 2012). It directly affected most European countries, though at different times and with different intensity. Unlike most previous wars, civilians were heavily exposed to combat, bombing, stress, and hunger. In particular, the war affected the childhood of various cohorts of Europeans, exposing them to a variety of shocks. A large fraction of these children are still alive today and able to recall the experience of war-related hardship.

Recent surveys that interview survivors of wars, famines and other dramatic events have stimulated a growing literature focusing on the long-term effects of large early-life shocks on late-life outcomes, such as education, income, physical and mental health, etc., and shows that these shocks may leave recognizable scars on survivors. The main channels considered are the disruption of the educational process through physical destruction, loss of educators, school closure or conscription of students (Ichino and Winter-Ebmer, 2004; Akbulut-Yuksel, 2014), the loss of parents during war, the increased risk of prosecution and dispossession, and the exposure to hunger or famine (Havari and Peracchi, 2011, 2017; Jürges, 2013; Kesternich et al., 2014; van den Berg et al., 2016). Most of these papers analyze the impact of WW2 in different European countries and find negative long-term effects of war-related hardship on education, health status and earnings of war survivors. However, to date there is no evidence on whether the effects of wars, and in particular WW2, could extend to subsequent generations. In principle, two different mechanisms may be at work. On the one hand, parents who were exposed to war but understand the value of schooling could push their children to study more and attain more education. On the other hand, parents who left school earlier because of war may be unable to assess the value of schooling and this may have a negative effect on the educational attainments of their children.

Our paper provides novel evidence on the intergenerational effects of WW2 on educational attainments using rich data covering multiple cohorts in several European countries. We combine micro-level data linking parents and children from the Survey of Health Ageing and Retirement in Europe (SHARE) with detailed historical information on military operations during WW2. We contribute to the recent literature on the long-term effects of conflicts, as well as to the more established literature on the intergenerational transmission of education, by focusing on parents-children dyads in which the parents were born between 1926 and 1949, and therefore spent part of their childhood or adolescence during the WW2 period, defined as the period from the beginning of the Spanish Civil War in 1936 to the end of its immediate aftermath in 1948. The available data allow us to address the following questions: How large is the negative educational shock for parents who were exposed to war-related hardship during the WW2 period? How much of this

negative effect persists across generations? Are the effects different by gender or age of exposure to war-related hardship? Does socio-economic status (SES) play a role in mitigating these negative effects, and what are the mechanisms at work?

By answering these questions, our study contributes to the literature in three ways. First, this is the first study that analyzes the intergenerational effects of WW2, and one of the few studies that looks at the effects of wars and violent conflicts on subsequent generations. The literature on the intergenerational effects of war or conflicts is limited to some evidence from the German Famine of 1916–1918 during World War I (van den Berg and Pinger, 2016), the 1967–1970 Nigerian Civil War (Akresh et al., 2017), and the 1861–1865 US Civil War (Costa et al., 2019). In addition, a recent paper by Campante and Yanagizawa-Drott (2015) uses data on the four major US theaters of the 20th century – World War I, WW2, Korea, and Vietnam – to study how the decision to participate in a war is transmitted across generations.

To an extent, this reflects the lack of data, as it is hard to find nationally representative surveys that jointly provide detailed information on linked generations (parents and children), as well as detailed information on the parents' exposure to war-related hardships. Second, unlike the studies just mentioned, our paper deals with the deadliest war in history, especially for civilians, and offers a larger geographical coverage as we use individual-level data from thirteen European countries. Third, unlike studies of recent conflicts, which focus on short-run children outcomes such as school dropout rates, test scores, or health, the children in our study have largely completed their educational process so we can measure much more accurately their investment in formal schooling.

Our identification strategy relies on temporal and geographical variation in parental exposure to war-related shocks. It exploits the availability in SHARE of data on linked generations, coupled with the rich retrospective information collected in the third wave of the survey (SHARELIFE) on early-life circumstances, for nationally representative samples of people born before 1957 in thirteen countries of continental Europe, namely Austria, Belgium, Denmark, Czech Republic, France, Germany, Greece, Italy, the Netherlands, Poland, Spain, Sweden, and Switzerland. Three features of SHARE are especially important. First, although SHARELIFE does not contain any question about direct experience of war, it does contain detailed information on the residential history of each respondent by year, country and region. By matching this information with the geographical information on major war events during the WW2 period, we are able to construct for every individual an indicator of potential war exposure in each year. Second, SHARELIFE also contains information on the experience of severe hardship episodes, such as hunger, financial hardship, etc., including their timing and duration. Third, SHARE respondents with children (henceforth, "parents") are asked to provide information on their offsprings, in particular their

education and occupational status, whether cohabiting or not. This is an important advantage of our data, as most available studies only look at cohabiting children (Oreopoulos et al., 2006). Further, since SHARE parents are aged 50 years or older, most of their children have already completed their formal education. This is another important advantage, as many available studies lack information on completed education and can only consider outcomes such as school dropout or grade repetition (Oreopoulos et al., 2006; Black and Devereux, 2011).

As main indicators of parental exposure to war, we use the number of years they lived in war-affected regions and the duration of their hunger experience during childhood and adolescence (ages 0–16). The estimated coefficients from our reduced form specifications show that the children of parents who experienced hunger or were exposed to war in childhood or adolescence tend to have less schooling on average than the children of parents who did not suffer hardships, all else being equal. Estimates from the pooled sample show that one year of war exposure by the mother is associated with an average reduction by 0.07 years in children schooling, and one year of hunger exposure is associated with an average reduction by 0.49 years in children schooling. Surprisingly, the effects of hunger experience by the father is essentially zero, while the effect of war exposure is negative but never statistically significant. As for the differences by the gender of the child, we find that the effect of war exposure is only negative and statistically significant for the dyad mother-daughter, but we find no statistically different results for daughters and sons when consider the effect of hunger experience.

Our results are broadly in line with the findings in the literature, including the few studies that look at differences by gender. The paper closest in spirit to ours is Akresh et al. (2017), which uses data for the Nigerian cohorts exposed to the Biafran war of 1967–1970 to estimate a reduced form relationship linking the education of children to an indicator of war exposure of the parents. They find no evidence of differential effects for mothers and fathers, nor significant differences by gender of the child. On the contrary, we find evidence of differential effects depending on the gender of the parent and the child, which provides insights into the possible mechanisms at work.

Our reduced form results also allow us to derive instrumental variables (IV) estimates of the coefficient of intergeneration transmission of education for the "war parents" by treating the indicators of war-related hardship as potential instruments. The results from the first stage equation show that these candidate instruments are indeed relevant, as the F-statistic is always well above the conventional threshold value of 10. We also provide evidence to support the "exclusion restriction" that parental war exposure has an impact on children's education only through parental education. Our "placebo regressions" show that being exposed to war while being of school age, namely between ages 6 and 16, could be a potential channel. According to our estimated IV re-

gressions, a one-year increase in maternal education increases children's education by 0.25 years on average, while a one-year increase in paternal education has no significant effects. These results are consistent with the main findings from the literature on intergenerational transmission of human capital, namely that the effects of education are stronger for mothers compared to fathers. After splitting the sample by gender and considering dyads parent/child, we find that mothers' education is more important for daughters compared to sons, everything else being equal. A one-year increase in maternal schooling on average increases the schooling of daughters by 0.35 years and that of sons by 0.16 years. Interestingly, these results are in line with most other IV studies. Amin et al. (2015) show that maternal education is more important than paternal education, even when using twin data. They provide new evidence on this "puzzle" using register-based Swedish data on the largest sample of twins used so far in the literature. The magnitude of their estimated effect is close to what has been found in most IV studies. They also show that only maternal education matters when allowing the effects to differ between sons and daughters. Such conclusions have strong policy implications. Since parental education accounts for a large part of the variation in intergenerational mobility, they seem to suggest that is more efficient to invest in maternal schooling in order to increase intergenerational mobility (Behrman and Rosenzweig, 2002). However, as mentioned by Carneiro et al. (2013), further research is needed in this respect, which is beyond the scope of this paper.

This paper continues as follows. Section 2 describes the data sources and the variables used in the analysis. It also shows some descriptive evidence. Section 3 present our baseline model and the main results. Section 4 discusses a number of modifications and extensions of our baseline model. Finally, Section 5 concludes.

2 Data

This section describes the data we use, namely the micro-level data from SHARE and SHARELIFE (Section 2.1), and the geographical and temporal information on major war events during the WW2 period (Section 2.2). We also provide some descriptive evidence on the distribution of hardships at the regional level, namely hunger, financial hardship and stress (Section 2.3), as well as the distribution of parent and children's education by war-related hardship (Section 2.4).

2.1 SHARE and SHARELIFE

SHARE is a multidisciplinary cross-country household panel survey that collects detailed information on individuals aged 50 or more (and their spouses irrespective of age), who speak the official language of the country in which they reside, and do not live abroad or in an institution. The

survey is designed to be representative at the national level and the country coverage offers a full representation of the different areas of continental Europe. The first three waves of SHARE cover all parts of continental Europe: Northern Europe (Denmark and Sweden), Central Europe (Austria, Belgium, France, Germany, the Netherlands, Switzerland), Eastern Europe (Czech Republic and Poland) and the Mediterranean countries (Greece, Italy, Spain). Five waves of SHARE are currently available, with new countries (Estonia, Hungary, Ireland, Israel, Luxembourg, Portugal, and Slovenia) joining the project in the last two waves.

The survey collects detailed information, at both the household and the individual level, covering different areas of research, such as household economics, education, health, social security and income, financial investments, etc. One advantage of SHARE is its cross-country comparability due to the common questionnaire and the standardization of fieldwork procedures.[1] Moreover, wave 3 (2008–2009) of SHARE, known as SHARELIFE, is a retrospective survey containing a variety of questions on the respondents' early life circumstances, ranging from residential mobility to health conditions, experience of hardships, and so on.

Two other aspects of SHARE make the survey particularly appealing for our purposes. First, we have detailed information on all the living children of people interviewed in wave 2 (2006–2007).[2] This information includes gender, year of birth, education, employment status, marital status, residence, and whether the child is a natural child or not. Since the target population of SHARE are people aged 50+ and their spouses, most of these children have already completed their educational process. As remarked in the Introduction, both these features are important for the study of intergenerational transmission of education.

Second, for people interviewed in SHARELIFE, we also have detailed retrospective information on residential mobility, experience of hardship episodes, early-life circumstances and family background.[3] Specifically, SHARELIFE collects information on the primary residence of the respondents at the time of their birth, as well as information on each subsequent residence where they lived for six months or more, including the start and end year, the type of residence, and

[1] SHARE is also harmonized with similar surveys that interview people aged 50+, such as the Health and Retirement Study (HRS) for the US and the English Longitudinal Study of Ageing (ELSA) for the UK.

[2] More precisely, SHARE collects information on up to four living children. We do not know the number of children who died. When there are more than four living children, the information is collected only for the first four sorted in ascending order by age group, geographical proximity to the parents, and year of birth. If two or more children share the values of all sorting variables, then one of them is randomly selected. Only 6 percent of the SHARE respondents with children report having more than four, so this aspect of the survey is unlikely to affect the results of our analysis.

[3] The SHARELIFE interview was designed to maximize the accuracy of recall. To this purpose, it adopted a multidimensional life grid (a computerized version of the life-calendar interview) that allowed respondents to view important events on a computer screen and, at the same time, allowed the interviewer to link questions to parallel events. Havari and Mazzonna (2015) provide evidence that the childhood information reported in SHARELIFE may be relatively immune of problems of recall bias.

the country, region and area (urban or rural) in which the residence was located.[4] We use this information to construct a retrospective longitudinal data set with people's location in each year, which we then match with data on major war events across European regions to obtain indicators of potential exposure to war events.

SHARELIFE also asks whether there was a distinct period during which the respondent experienced stress, poor health, financial hardship or hunger, as well as the year when this period started and ended. For example, the sequence of SHARELIFE questions on the experience of hunger starts by asking: "Looking back on your life, was there a period during which you suffered from hunger?" It then continues by asking: "When did this period of hunger start?", and concludes by asking: "When did this period of hunger stop? Although we have no information on the seriousness of each hardship episode, we can compute the number of years it lasted by taking the difference between the year it ended and the year it started.[5]

In addition to the information on residential location and hardship episodes, SHARELIFE collects detailed information on the socio-economic background of the respondents when they were 10 years old. Most relevant for our purposes is the information on the occupation of the main breadwinner in the family, on the number of books at home, on the household size and composition, and on the absence of the mother or the father.

As for the variable of our primary interest, the survey measures the education of both the parents and the children by the highest degree obtained, following a protocol that is harmonized across the participating countries. More precisely, the questionnaire asks: "What is the highest school leaving certificate or school degree that you have obtained?". Each country team relies on local experts to map the answer to the SHARE education question into two measures: the ISCED-97 educational level corresponding to each degree and the number of years of education needed to complete each level. The release guide of SHARE provides a conversion table from ISCED levels to years of education.[6] In addition, SHARE also provides information on the years of completed schooling of the parents. More precisely, the SHARE questionnaire includes the question: "How many years have you been in full time education?". This is the standard measure used in the literature on the intergenerational transmission of education, so using this measure is important for comparability.

As for our sample selection criteria, we confine attention to people born between 1926 and

[4] SHARELIFE adopts the Nomenclature of Units for Territorial Statistics (NUTS) developed by the European Union, but the level of regional disaggregation varies considerably and ranges from the finer NUTS3 level for the Czech Republic to the coarser NUTS1 level for Belgium, Denmark, France and the Netherlands.

[5] Respondents are asked to report only one episode for each type of hardship, presumably the most salient (phrases such as "distinct period" or "compared to the rest of your life" are meant to capture this idea).

[6] More information is available at http://www.share-project.org/fileadmin/pdf.

1949, present in waves 2 and 3 of the survey, whose biological children (about 96 percent of the total sample of children) had at least 25 years of age at the time of their parents' interview in wave 2. Because of this age limit, most of our children have completed their full-time education. We also exclude children born before 1951 to avoid the risk that they have been exposed to war-related hardship. After dropping cases with missing values, our working sample consists of 15,443 mothers, 11,306 fathers and 18,464 children. The number of mothers and fathers is different because we have families with either one or two parents.

Table 1 presents the mean and the standard deviation (S.D.) of all the variables we use in our analysis. For simplicity, we pool the data without distinguishing by country or birth cohort. The table show that fathers are on average more educated than mothers (they have on average one more year of schooling), while children are on average more educated than parents (they have on average 2.7 more years of schooling than fathers and 3.7 more years of schooling than mothers). Because fathers were on average born in late 1937, and are almost one and a half year older than mothers, they are more likely to have been exposed to war (40 percent of fathers and 34 percent of mothers) and to have experienced hunger (9.6 percent of fathers and 6.1 percent of mothers) or financial hardship (3.5 percent of fathers and 2.9 percent of mothers). However, we see no significant differences between parents in terms of experience of stress (1.4 percent of fathers and 1.5 percent of mothers) or in terms of socio-economic background in childhood (as measured by the fraction living in rural areas, or having few books at home, or being from a family with a low-skilled breadwinner, or having grown up in a family where either the mother or the father were absent).

2.2 Major war events

SHARE does not ask direct questions about war experience, but the information it collects on the region of residence of the respondents in each single year allows us to construct measures of potential war exposure by exploiting the available geographical information on major war events (both combat operations and aerial bombings) during the period from the beginning of the Spanish Civil War in 1936 to the end of WW2 in 1945.

For the Spanish Civil War, our main sources of information are Thomas (2003) and Preston (2006), while for WW2 we exploit a variety of sources, including Ellis (1994) and Davies (2006). We refer to the European regions affected by major war events as "war regions". Our classification into war and non-war regions updates that used in Havari and Peracchi (2017). The remainder of this section provides some detail for the regions covered by SHARE.

The Spanish Civil War began in July 1936 and initially affected all of Spain, except the Canary Island and Ceuta and Melilla. In 1937 it mostly affected Andalusia, Extremadura, Castile-La

Mancha, Madrid, Aragon, the Basque Country, Cantabria, and Asturias. In 1938 it mostly affected Andalusia, Extremadura, Castile-La Mancha, Madrid, and Aragon, while in 1939 it mostly affected Andalusia, Extremadura, Castile-La Mancha, Madrid, the Valencian Community, and Catalonia. The Spanish Civil War conventionally ended on April 1, 1939.

Exactly five months later, on September 1, 1939, WW2 began with the German invasion of Poland, coordinated with the Soviet invasion from the east on September 17. Thus, for 1939, our war regions include the whole of Poland and some regions of Spain. The regions along the French-German border are not included because only affected by small-scale war operations (the so-called "phony war"). In 1940, our war regions include the whole of Belgium and the Netherlands, the northern and eastern regions of France, and the north-western part of Greece. In 1941, they include the whole of Greece, as well as the German regions of Bremen and Hamburg that were subject to heavy aerial bombing. In 1942, no region considered in SHARE was affected by major combat operations, except some heavily bombed German regions. In 1943, combat was limited to the southern Italian regions, but aerial bombing of Germany extended and intensified. In 1944, combat spread to the eastern regions of Poland, the central regions of Italy, most of Greece, and parts of Belgium, France and the Netherlands, while large part of Germany was under heavy aerial bombing. In 1945, our war regions include all of Germany, the western, central and northern regions of Poland, the eastern and central regions of the Czech Republic, the northern regions of Italy, the eastern regions of Austria, and parts of Belgium, France and the Netherlands. WW2 ended in Europe on May 8, 1945, with the unconditional surrender of all German forces.

2.3 War-related hardship

We use various indicators of war-related hardship. One is having lived in a war region between 1939 and 1945 (between 1936 and 1939 for Spain), while the others are indicators for reporting the experience of a variety of hardships (hunger, stress and financial hardship). Of these hardships, hunger is most closely associated with WW2 (Havari and Peracchi, 2017). For some countries, financial hardship and stress are also related to war, but the link is much weaker than for hunger.

As for war exposure, Figure 1 shows for how many years each European region was subject to major war events between 1936 and 1945. The regional disaggregation reflects the level of geographical detail available in the public-use files of SHARELIFE. The shading in the map darkens with the number of years. The darkest color, corresponding to three years or more, is for some regions of Belgium, Eastern France and the Netherlands (visited by war a first time in 1940 and a second time in 1944–1945), the Berlin, Bremen and Hamburg regions in Germany (subject to heavy aerial bombing from 1942 to 1945 and to combat in 1945), the regions around Warsaw in Poland

(ravaged by war first in 1939 and then again in 1944–1945), and Andalusia, Aragon, Castile-La Mancha, Extremadura and the Madrid regions in Spain (subject to fighting for at least three years during the Spanish Civil War). The lightest color is for the regions that did not experience any major war event. These include the neutral countries (Sweden and Switzerland), as well as Denmark (that was under German occupation from April 1940 to the end of WW2), the south-western part of France, two Alpine regions of Italy, the central and western regions of Austria, the western and southern part of the Czech Republic, and the Spanish regions of Ceuta and Melilla and Murcia.

As for the other hardships – hunger, financial hardship and stress – Figure 2 shows the average fraction of parents who report suffering these hardships in each region during the period 1936–1948 which includes WW2, its prelude (the Spanish Civil War) and its aftermath (the Allied occupation of Austria and Germany and the Greek Civil War). Panel (a) is for hunger, panel (b) is for financial hardship, and panel (c) is for stress.

2.4 Parental hardship and educational attainments

The focus of our analysis is on the intergenerational transmission of education so, in panel (a) of Figures 3 and 4, we show the distribution of mothers' and fathers' years of schooling by, respectively, war exposure and hunger experience. Parents exposed to war or hunger have less schooling compared to parents who did not experience such events. The difference is large for both mothers and fathers, and appears to be more pronounced for hunger experience (right panels) than for war exposure (left panels). For example, the probability of having 5 years of education or less is 10 percent for mothers not exposed to war (dash grey line), but 20 percent for those exposed to war (solid black line). The gap increases when considering hunger, as the probability of having 5 years of education or less is from 10 percent for mothers not exposed to hunger, but jumps to more than 30 percent for those exposed to hunger (more than 20 percent increase). For fathers, the difference in the probability of having 5 years of education or less is lower (5 percent when considering war exposure and 12 percent when considering hunger experience). We also find a smaller gap in the lower tail of the distribution for fathers compared to mothers.

In panel (b) of Figures 3 and 4 we instead show the distribution of children's years of education separately by parental exposure to war and experience of hunger. Children whose parents were exposed to war or experienced hunger have on average less schooling compared to children whose parents were not. This difference is more pronounced for children positioned in the lower part of the distribution and especially for the dyad mother-child. For a child, the probability of having at most 10 years of education is 10 percent when the mother is not exposed to war and 20 percent when the mother is exposed to war. This difference is slightly bigger when considering hunger.

3 Baseline analysis

Unlike the existing literature, which is largely confined to the long-term effects of violent conflicts on the cohorts directly exposed, our data offer the unique opportunity of assessing the effects of WW2 on the education not only of the parents (the first generation), but also of their children (the second generation). Sections 3.1 and 3.2 discuss the relationship between WW2 and the educational attainments of parents and children respectively, while Section 3.3 combines these results to estimate the parameter of the intergenerational transmission of education for our linked generations using war-related hardships as instruments.

3.1 WW2 and the educational attainments of parents

As for the relationship between war-related hardship and the educational attainments of the first generation, we estimate the following model

$$Y_j^p = \gamma_0 + \boldsymbol{\gamma}_1^\top \boldsymbol{H}_j^p + \boldsymbol{\gamma}_2^\top \boldsymbol{X}_j + \boldsymbol{\gamma}_3^\top \boldsymbol{Z}_{ij} + V_j, \tag{1}$$

where Y_j^p is years of education of the jth parent (either the mother or the father), $\boldsymbol{H}_j^p$ is a vector containing the number of years the parent was exposed to war or experienced hunger, [7] $\boldsymbol{X}_j$ is a vector containing family background characteristics of the parent around age 10, $\boldsymbol{Z}_{ij}$ is a vector containing controls for the birth year and the country of the parent, as well as the gender and birth year of child i, and V_j is a regression error uncorrelated with $\boldsymbol{H}_j^p$, $\boldsymbol{X}_j$ and $\boldsymbol{Z}_{ij}$. The vector $\boldsymbol{X}_j$ contains indicators for having only few books at home, for living in a rural area, for the breadwinner in the family (usually a grandparent of the child) being low-skilled, for the father of the parent (i.e., the grandfather of the child) being absent, and for the mother of the parent (i.e., the grandmother of the child) being absent. The vector $\boldsymbol{Z}_{ij}$ includes an indicator for the child being a female, a cubic polynomial in the birth year of the child, and a set of indicators for the year of birth of the parent and her/his country of residence at the time of the SHARE interview. To account for heterogeneity in country involvement in the war, we include indicators for the following country groups: German Reich (Austria, Germany), Italy, occupied countries (Belgium, Czech Republic, Denmark, France, Greece, the Netherlands and Poland), and Spain. The excluded group is neutral countries (Sweden and Switzerland).

We estimate model (1) by ordinary least squares (OLS) using the subsample of SHARE respondents who were born between 1926 and 1949, participated in both waves 2 and 3, and whose biological children were aged 25 or older at the time of the parents' interview in wave 2. Table 2

[7] As a robustness check, we also run our analysis using binary indicators of war exposure and hunger exposure in the age interval 0–16. Results are available upon request.

presents our results. In columns 1 and 4 we pool all children but consider an indicator for the child being a female, in columns 2 and 5 we consider the dyad mother-daughter and father-daughter, and in columns 3 and 6 we consider the dyad mother-son and father-son. Our results show that the experience of hunger in childhood or early adolescence has a strong negative effect on parental education, an effect that is separate from the negative effect of having a low socioeconomic status in childhood, as measured by the number of books at home and the skills of the breadwinner in the family when the parent was 10 years old, among other controls. Notice that most of these characteristics are associated to the grandparents' generation when the parent was 10 years old. One year of war exposure, measured by the number of years living in a region interested by war military operations, is associated with an average reduction of 0.389 years in maternal schooling (column 1) and of 0.461 years in paternal schooling (column 4). As for hunger, we observe a reduction of schooling of 0.138 years for mothers and 0.130 years for fathers.

The estimated coefficients on war exposure and hunger experience, and those associated with the indicators of family background in childhood (few books, low skilled breadwinner) are strongly statistically significant for both mothers and fathers. Interestingly, we observe that the socioeconomic conditions when the parent is aged 10 seem to have a stronger negative effects on women. Having had a low skilled parent when aged 10 reduces mothers' education by 0.33 years, whereas for fathers we do not observe any meaningful effect. Finally, the absence of the parent when 10 seem to play a role for the educational attainment of the mothers later on. Kalil et al. (2016) show that the absence of the parent may play a role in terms of children schooling and the intergenerational transmission of education.

3.2 WW2 and the educational attainments of children

We now turn to the relationship between war-related hardship and the educational attainments of the second generation by estimating the following model

$$Y_{ij}^{c} = \pi_0 + \boldsymbol{\pi}_1^{\top} \boldsymbol{H}_j^{p} + \boldsymbol{\pi}_2^{\top} \boldsymbol{X}_j + \boldsymbol{\pi}_3^{\top} \boldsymbol{Z}_{ij} + \epsilon_{ij}, \tag{2}$$

where Y_{ij}^{c} is the number of years of education of child i born to parent j and ϵ_{ij} is a regression error uncorrelated with $\boldsymbol{H}_j^{p}$, $\boldsymbol{X}_j$ and $\boldsymbol{Z}_{ij}$.

Table 3 presents the OLS estimates of model (2), separately for mothers (columns 1–3) and fathers (columns 4–6). Our estimates show that the children of parents who were exposed to war-related hardship in childhood or adolescence tend to have less schooling on average than the children of parents who did not suffer hardships, all else being equal. Surprisingly, these effects are strong and statistically significant for the dyad mothers-children, whereas we do not find statistically significant effects for the dyads fathers-children. More precisely, the pooled estimates show that

one year of hunger experience by the mother is associated with an average reduction by 0.49 years in children schooling, and one year of war exposure with an average reduction by 0.07 years. The first effect is strongly statistically significant at the 1 percent level, the second at the 5 percent level.

As in (1), we also account for characteristics of the parent when he or she was 10 years old, namely characteristics related to the grandparents generation that aim to capture the initial conditions of the parent in terms of SES. This is a substantial improvement compared to recent studies that look at the long-term effects of violent conflict or famine on the second generation. Some of these characteristics seem to have a strong effect on the schooling of children (third generation), pointing towards an independent effect of the first generation characteristics on the schooling of the third generation. In particular, we see that belonging to a family where parents had few books at home when aged 10 reduces the schooling of their offspring by 1.22 years from the matrilineal side and 1.18 from the patrilineal side. Similar effects are also seen for the fathers. Interestingly, we see that the absence of the grandparents (especially grandmothers) from the mothers' side has a negative effect on grandchildren schooling.

Regarding gender differences, we see that the effects of hunger experience are not very different when we consider separately the two dyads, mother-daughter and mother-son. The effect of war exposure is also negative, but is statistically significant only for the dyad mother-daughter, not for the dyad mother-son.

Overall, our results are in line with the findings in Akresh et al. (2017) who use data for the Nigerian cohorts exposed to the Biafran war of 1967–1970 to estimate a reduced form relationship linking the education of children to war exposure of their parents. Nevertheless, they do not find differential effects for mothers or fathers. Neither do they find significant differences by child gender. It is important to notice that differently from the authors we consider the intergenerational transmission of the education observing children in the very long-run, whereas Akresh et al. (2017) estimate the effects of war exposure on children at young age in the context of a developing country.[8] In Section 4 we provide further insights on the possible mechanisms that may drive our results.

3.3 Intergenerational transmission of education

Our OLS estimates of the relationships (1) and (2) show that parental exposure to war-related hardship is associated with reductions in the schooling attainments not only of the first generation, but also of the second. These two relationships may be regarded as "reduced forms", that is, as descriptions of the statistical association between parental exposure to war-related hardship and

[8] In particular their analysis concerns mostly the effects of parental exposure to war on child health, measured in terms of mortality under the age of 5, and the heigh-for-age z-score.

schooling attainments of the two generations, controlling for other variables that may plausibly be considered as exogenous. We find it interesting, also from a policy perspective, to go beyond these reduced form relationship and try to estimate the following structural relationship linking the education of a child to the education of her/his parent (the mother or the father)

$$Y_{ij}^{c} = \beta_0 + \beta_1 Y_j^p + \boldsymbol{\beta}_2^{\top} \boldsymbol{X}_j + \boldsymbol{\beta}_3^{\top} \boldsymbol{Z}_{ij} + U_{ij}, \tag{3}$$

where U_{ij} is an error term that is potentially correlated with Y_j^p but plausibly uncorrelated with $\boldsymbol{X}_j$ and $\boldsymbol{Z}_{ij}$. The parameter β_1 summarizes the process of intergenerational transmission of education by measuring the expected change in the number of years of education of the child caused by a one-year increase in parental education, everything else being equal. Substituting the relationship (1) into (3) and rearranging gives the relationship (2), where $\boldsymbol{\pi}_1 = \beta_1 \boldsymbol{\gamma}_1$. Thus, the fact that our OLS estimates of $\boldsymbol{\pi}_1$ and $\boldsymbol{\gamma}_1$ are both statistically different from zero suggests that war-induced variation in parental education may indeed cause changes in the schooling attainments of children.

Parental ability is likely to be an important determinant of the schooling attainments of both parents and children. If we could observe it, and include it as an additional control variable in model (3), then we would obtain consistent estimates of the intergenerational parameter β_1 by simply estimating the resulting "long regression" via ordinary least squares (OLS). Since parental ability is unobserved, it becomes part of the error term U_{ij}. The resulting correlation between U_{ij} and Y_j^p causes inconsistency of the OLS estimates of β_1 from model (3). Because of this, the recent literature on the intergenerational transmission of education is very careful in distinguishing between correlations and causal effects (see, e.g., Holmlund et al., 2011). A common way of accounting for endogeneity of parental schooling is to rely on IV methods that exploit sources of exogenous variation in parental schooling.[9] This approach requires the proposed instruments to affect child schooling only through parental schooling.

In this paper we address the endogeneity problem using a novel IV strategy that exploits variation in parental education induced by war-related hardship. Our strategy is similar to that used by Ichino and Winter-Ebmer (2004) to study the long-term earnings losses associated with the educational disruptions caused by WW2 in Austria and Germany. The reduced form results from (1) indicate that war exposure and hunger experience are plausible candidate instruments for parental schooling, in the sense that they are highly correlated with this endogenous regressor. The key exclusion restriction needed for exogeneity of these instruments is that, after conditioning on the controls included in the model, they must affect the education of a child only indirectly,

[9] Following the seminal papers by Angrist and Krueger (1991) and Acemoglu and Angrist (2000), a frequently used IV strategy relies on the variation induced by legislated increases in minimum school-leaving age. The argument is that these legislated increases force members of the affected cohorts to stay in school longer than they would otherwise and therefore represent a positive exogenous shock to formal education.

through parental education. Notice that controlling for the birth year of the parents helps capture time-invariant unobserved characteristics of WW2 cohorts, such as risk aversion or rate of time preference.

Table 4 presents our two-stage least squares (2SLS) estimates of model (3), obtained using as instruments the duration of war and hunger episodes in years.[10] To facilitate comparisons with the results available in the literature, we employ the same educational measure for both the parent and the child, namely the number of years of schooling completed. Overall, our 2SLS estimates lie in the interval of values found in the intergenerational mobility literature, where the estimated IV coefficients for parental schooling vary between 0.2 and 0.4 years (Black et al., 2005). Our estimates confirm the existence of large differences between mothers and fathers, and between boys and girls. In line with the results in Black et al. (2005), we find a strong causal effect for maternal education but not for paternal education. In particular, the pooled estimates in column 4 of Table 4 show that a one-year increase in maternal education on average increases the schooling of a female child by 0.329 years, and the schooling of a male child by 0.254 years. The difference between girls and boys increases substantially when we consider separately the two dyads, mother-daughter and mother-son, as the intergenerational coefficient is equal to 0.348 and is statistically significant at the 1 percent level in the first case, and is equal to 0.163 and statistically significant only at the 10 percent level in the second case. The estimates for the pooled sample of fathers in Table 4 give an intergenerational coefficient of 0.142 for a female child and 0.075 for a male child, and of 0.082 for the dyad father-daughter and 0.055 for the dyad father-son. None of these effects is statistically significant at conventional levels.

Unlike Black et al. (2005), our estimates are strongly statistically significant and refer to the whole sample of mothers (in their paper the IV estimates are differently from 0 only when considering the subsample of parents' with less than 10 years of schooling). As they point out, the main reason for the lack of precision of their 2SLS estimates is the weak first stage relationship between parental education and their instrument, namely educational reforms. This is not the case in our context, as the the conventional criteria are fulfilled (the F-statistic for the significance of two instrument is always well above its conventional threshold of 10 and the estimated coefficients are strong and statistically significant). We also find that the transmission of education from mothers to daughters is stronger than the transmission from mothers to sons.

Our instruments only allow us to estimate a local average treatment effect, and this effect is identified for the compliers' subgroup, that is, for the parents who changed their educational attainments because of war exposure or hunger experience. Without war-related hardship, these

[10] An alternative specification would be to use as instruments binary indicators of war exposure and hunger experience.

individuals would have taken more schooling. In particular, the pooled estimates show that one year of hunger experience is associated with an average reduction by 0.138 years in maternal schooling and by 0.133 years in paternal schooling. Although we cannot formally test exogeneity of the proposed instruments, we provide some evidence supporting our claim that parental exposure to war-related hardship only affects children education through parental education. We do so by presenting the results of the Hansen-Sargan J-test of validity of the over-identifying restriction implied by the use of our instruments as well as by studying possible underlying mechanisms (Section s:discussion) Unlike Oreopoulos et al. (2006), who consider a single model in which the key regressor is the sum of maternal and paternal education, we consider separate models for the dyads mother-children, mother-daughter, mother-son, father-children, father-daughter and father-son. This allows us to distinguish the role of the two parents and, at the same time, to examine differences between boys and girls in the effects of parental education.

As a comparison, in Table 5 we also present the results of estimating model (1) by OLS. According to the OLS estimates, a one-year increase in maternal education is associated with 0.314 more years of school for a female child and 0.238 more years of school for a male child. Since a typical school year corresponds to about 10 months, this corresponds to 3.1 more months for a male child and 2.4 more months for a female child. The results for the sample of fathers are only slightly lower as a one-year increase in paternal education is associated with 0.289 more years of school for a female child and 0.225 more years of school for a male child. Interestingly, these results are very much in line with the findings in Black et al. (2005) who use population register data from Norway to estimate the causal effect of parents' schooling on children's schooling. Their OLS estimates range between 0.237 when considering mother-all children specification and 0.217 when considering father-all children specification, and are statistically significant at 5 percent level.[11]

Comparing the estimates in Table 5 with those in Table 4, we conclude that the OLS and 2SLS estimates have the same sign but the magnitude of the coefficients in the latter specification are a little larger for mothers, especially for the dyad mother-daughter, and much smaller for fathers. We conclude from this analysis that one of the channels to be explored is whether women are more vulnerable to dramatic events such as wars and hunger, especially if they are at school-age. Papers analysing more recent wars find that during a war girls are more likely to be affected in terms of schooling attainment because they react by not going to school at all (Shemyakina, 2011). This could be a working hypothesis which we dig into in the next session.

[11] Differently from our case, they consider exogenous variation in parent schooling using the 1959 reform of primary schooling in Norway, which is shown to produce effects only in the lower tail of the education distribution.

4 Discussion

Our results show that exposure to war-related hardship in childhood and adolescence has a negative effect on parental schooling attainment. One may wonder what channels drive our main results and whether the timing of exposure, especially to hunger, makes a difference. Ichino and Winter-Ebmer (2004) study the effects of being exposed to the war on earnings later in life and find that indeed the war could have disrupted the schooling of individuals who were at school age during the war. With our data we are able to investigate whether being exposed to war or hunger when parents where at school age (6–16) between 1936 and 1945 has an impact on the education of the children. Results are reported in Table 6. As before, results are shown separately for the mother and the father. The estimated coefficients from the reduced form equation are strong and statistically significant, and are now larger in magnitude compared to the estimated coefficients in our baseline specification (Table 3). The estimated coefficients on the dyad mother-daughter is still significant, though at 5 percent level. This shows up also in the 2SLS estimates.

As a support for these findings, we re-run our analysis considering now indicators of war or hunger in the age range 18–30 years. Results are reported in Table 7. We now observe that the estimated coefficients for war duration in the reduced form and first stage specification for the mothers is no longer statistically significant. The estimated coefficients for hunger remain significant but are very low in magnitude. As for fathers the estimated coefficients of hunger and war confirm the baseline results (Table 3).

As discussed in the previous section, we provide further evidence on excluding other potential channels through which parental exposure to war and hunger can affect children's schooling. Besides education one potential way through which exposure to conflict can affect individuals outcomes and those of the offspring may be health related problems. In order to test this channel we need to use data on health conditions of the parents when they were young. The SHARE survey collects detailed information on respondents' health outcomes after the age of 50. If we were to use these indicators it would be difficult to disentangle the direct effect of war exposure on health from the effect mediated through education attainment. Fortunately, the SHARELIFE wave contains retrospective information on respondents' health when they were younger. For this we consider two indicators, namely whether they missed school for one month or more due to health problems or whether they remember to have been hospitalized for one month or more between age 0–16. We then regress these indicators on the indicators of war and hunger exposure. Results are reported in Table 8.[12] From this exercise no strong association emerges between exposure to hardship and

[12] Another potential health indicator would be self-reported health in the age 0–16 retrospectively provided by the respondents. However, as shown by many papers in the literature this indicator is highly correlated with self-reported

the health indicators when parents were young.

4.1 Extensions and sensitivity checks

We now discuss a number of extensions of the baseline model presented in Section 3. First, we consider an alternative model specification where the vector of parent's characteristics includes a polynomial in birth year, indicators for country of residence, and a single index of SES of the parent around age 10. Following Havari and Peracchi (2017), we construct this index via principal component analysis from the set of indicators of parental family background in childhood available in SHARE, namely the number of books at home, the occupation level of the breadwinner, and the number of rooms per capita.

Results are reported in Table 9. In the first stage equation (1) and the reduced form equation (2), we fully interact this index, which we normalized to take values between -1 and 1 (where negative values mean low SES and positive values mean high SES), with our two instruments, namely the duration of war exposure and hunger experience. The 2SLS estimates of the intergenerational coefficients for mothers are now a little larger compared to the baseline estimates, and those for the fathers are twice as large. In particular, the estimates for the pooled sample of fathers give an intergenerational coefficient of 0.213 for a female child and 0.138 for a male child, and of 0.152 for the dyad father-daughter and 0.114 for the dyad father-son. All coefficients are statistically significant at the 10 percent level or better.

Interestingly, parental SES in childhood has a strong and statistically significant impact on parental education in the first stage, with an estimated coefficient of about 2.8 years for mothers and 3.5 years for fathers. Maternal SES in childhood is also associated with an increase by at least one year in child education in the reduced form, while paternal SES status in childhood is associated with a slightly greater increase by 1.3 years. Further, for both mothers and fathers, the coefficient on the interaction of SES with hunger experience is negative in both the first stage and the reduced form, while the coefficient on the interaction of SES with war exposure is positive.[13]

Second, we consider another way of increasing the set of available instruments by adding the duration of other war-related hardship, namely stress and financial hardship in childhood. Table 10 present our results separately for mothers and fathers. The 2SLS estimates of the intergenerational coefficients are very similar to the baseline estimates reported in Table 4. The estimated coefficients on hunger and war are quite similar for the mothers and not too different for the fathers. In addition,

health in late adulthood as often people project their current health conditions to when they were young.

[13] As a robustness check we also re-run the analysis by interacting our hardship indicators with the distinct indicators that use in the principal component analysis, namely an indicator for having few books at home, for having a breadwinner in a low skilled occupation and for the number of rooms per capita. Results are shown in A1 and A2 in the Appendix.

we find that financial hardship has a clear negative effect on maternal and paternal education in (1) and on child education in (2), while stress does not appear to have an effect on maternal education in (1), though it appears to have a positive effect on paternal education, and on child education in (2). Unlike hunger and financial hardship, the prevalence of episodes of stress during childhood or adolescence is very low and not concentrated in the time period we focus on, which could partially explain the weaker results we obtain.

Third, in our previous specifications children education is considered continuous and it is measured by the number of years of completed education. We now estimate a different model that explicitly recognizes the categorical nature of the information originally available in SHARE on the education of the children. The categorical variable recorded in SHARE follows the ISCED-97 classification with seven levels: "No school", "Elementary", "Lower Secondary", "High school", "Vocational", "College", and "Post-graduate diploma". We recode this variable using the following three categories: "Less than high school" ($S = 1$), "Only high school" ($S = 2$), and "College or more" ($S = 3$). Table 11 shows the percentage distribution of children by educational category for each category of parental education. These conditional distributions are remarkably similar for mothers and fathers.

Treating years of parental education as a continuous variable, and controlling for exogenous characteristics of the parent and the child, gives the following model for the probability that child i in family j is in the sth educational category

$$\mathbb{P}\left[Y_{ij}^c = y_s \mid Y_i^p = y, \boldsymbol{X}_j = \boldsymbol{x}, \boldsymbol{Z}_{ij} = \boldsymbol{z}\right] = G(\beta_{0s} + \beta_{1s} y + \boldsymbol{\beta}_{2s}^\top \boldsymbol{x} + \boldsymbol{\beta}_{3s}^\top \boldsymbol{z}), \quad s = 1, 2, 3, \tag{4}$$

where $G(\cdot)$ is some link function. Notice that one of these relationships is redundant because probabilities must add up to one.

For simplicity, we take the function $G(\cdot)$ to be the identity link, so the resulting linear probability model can again be estimated via 2SLS. The first stage equation is the same as (1), but now the reduced form consists of a set of linear probability models,

$$\mathbb{P}\left[Y_{ij}^c = y_s \mid \boldsymbol{H}_j^p = \boldsymbol{h}, \boldsymbol{X}_j = \boldsymbol{x}, \boldsymbol{Z}_{ij} = \boldsymbol{z}\right] = \pi_{0s} + \boldsymbol{\pi}_{1s}^\top \boldsymbol{h} + \boldsymbol{\pi}_{2s}^\top \boldsymbol{x} + \boldsymbol{\pi}_{3s}^\top \boldsymbol{z}, \quad s = 1, 2, 3, \tag{5}$$

one for each possible educational category of the child.

Table 12 shows the reduced form results and the 2SLS estimates. For simplicity, we only report the estimated parameters for the probability that a child is in the first two educational categories, namely having less than a high school degree (top panel) and having only a high school degree (bottom panel). Further, as previously we contrast the results for the dyads mother-all children, mother-daughter, mother-son and father-all children, father-daughter and father-son. In

all specifications we include indicators for the year of birth of the parent and the country of residence of the parent at the time of the SHARE interview. We also include a cubic polynomial in the birth year of the child. The reduced form results show that children whose mothers were exposed to hunger or war have a higher probability to receive less than a high school degree. Results are not too different by gender and the magnitude of the estimated effect is larger for war compared to hunger. As for the father we find weaker effects only for hunger.

An additional year of schooling of the parent, reduces the probability that the child has has less than a high school degree by 4.8 percentage points for the dyad mother-all children, and 2.2 percentage points for the father-all children. Results do not differ much by gender except for the relation father-son which is not statistically different from zero. Further, we see that an additional year of schooling of the mother increases the probability that a child has a high school degree by 2 percentage points, whereas for fathers results are not statistically different from zero. These results show the presence of non-linear effects especially for fathers, as for them we find an effect only among children that have low education. For mothers results tend to be in line with the baseline results.

Finally, we re-run our regression model by accounting for country fixed effects instead of country-group fixed effects. Results are shown in Table 13.

5 Conclusions

In this paper we investigate the intergenerational effects of World War II on education using rich and unique data on linked generations from the Survey of Health, Ageing and Retirement in Europe (SHARE) and detailed historical data on military operations for the period 1936–1945. This paper is the first to analyzes the intergenerational transmission of educational shocks triggered by war and severe hardship. We contribute to the existing literature, which documents how hardship can leave scars on those directly exposed, by showing that some of these effects can extend to subsequent generations. Our reduced form results show that children whose mothers were exposed to WW2 hardship receive less education (from 0.07 to 0.49 less years), while we find no statistical significant effect from the father's side. The richness of our data also allow us to estimate the coefficient of intergenerational transmission of education by using an IV strategy that relies on war exposure and hunger experience as instruments. Interestingly, the sign and magnitude of our 2SLS estimates are roughly in line with those found in the intergenerational mobility literature that mostly relies on legislated increases in minimum school-leaving age (Black et al., 2005). The similarity of the results is actually quite remarkable, as we use a very different reference population in terms of country and birth cohort and a completely different set of instruments. Our IV estimates also confirm the

existence of large differences between mothers and fathers, and between boys and girls. As for the mechanisms at place, our placebo regressions show that being at school age on the onset of hardships can explain most of the detrimental effect for parents' education and for the education of the offspring. In fact, we do not find statistically significant estimates when considering parents who experienced these hardships after the age of 18. We provide a series of extensions and robustness checks that confirm our main results.

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Table 1: Mean and standard deviation (S.D) of all the variables used in the analysis.

	Mean	S.D.
Mothers ($N = 15,443$)		
Years of education	9.2	4.2
Year of birth	1940.5	5.7
Age in 2006–2007	65.7	5.7
War	0.288	0.453
Hunger	0.061	0.239
Financial hardship	0.029	0.168
Stress	0.015	0.121
Rural area	0.701	0.458
Few books	0.505	0.500
Low skilled breadw	0.235	0.424
Grandpa absent	0.091	0.288
Grandma absent	0.039	0.193
SES in childhood	-0.185	0.461
Fathers ($N = 11,306$)		
Years of education	10.0	4.7
Year of birth	1937.7	5.9
Age in 2006–2007	68.5	6.0
War	0.414	0.493
Hunger	0.096	0.294
Financial hardship	0.035	0.183
Stress	0.014	0.118
Rural area	0.698	0.459
Few books	0.539	0.499
Low skilled breadw	0.224	0.417
Grandpa absent	0.089	0.285
Grandma absent	0.038	0.192
SES in childhood	-0.420	0.343
Children ($N = 18,464$)		
Years of education	12.9	3.3
Year of birth	1967.7	6.5
Age in 2006–2007	39.1	6.5
Female child	0.483	0.500

Note: The sample refers to mothers and fathers born between 1926–49 and children who were aged 25 or more in the year of the interview (2006/2007).

Table 2: First stage estimates for parental schooling as a function of hardship experience.

	Mother			Father		
	All	Daughter	Son	All	Daughter	Son
Hunger duration	-0.138 ***	-0.147 ***	-0.132 ***	-0.130 ***	-0.136 ***	-0.123 ***
	(0.014)	(0.021)	(0.019)	(0.015)	(0.024)	(0.020)
War duration	-0.389 ***	-0.404 ***	-0.378 ***	-0.461 ***	-0.434 ***	-0.487 ***
	(0.036)	(0.053)	(0.050)	(0.046)	(0.066)	(0.064)
Rural area	-1.013 ***	-1.003 ***	-1.021 ***	-1.008 ***	-1.131 ***	-0.898 ***
	(0.064)	(0.092)	(0.090)	(0.083)	(0.120)	(0.117)
Few books	-2.420 ***	-2.405 ***	-2.433 ***	-2.894 ***	-2.789 ***	-2.976 ***
	(0.063)	(0.091)	(0.088)	(0.083)	(0.119)	(0.116)
Low-skilled breadw	-0.330 ***	-0.347 ***	-0.306 ***	-0.083	-0.074	-0.090
	(0.065)	(0.095)	(0.089)	(0.088)	(0.126)	(0.123)
Grandpa absent	0.219 **	0.276 *	0.168	0.243 *	0.199	0.291
	(0.099)	(0.147)	(0.134)	(0.141)	(0.207)	(0.191)
Grandma absent	-0.446 ***	-0.230	-0.663 ***	0.252	-0.150	0.644 **
	(0.159)	(0.226)	(0.226)	(0.206)	(0.299)	(0.284)
Female child	0.043			0.013		
	(0.056)			(0.074)		
Constant	12.072 ***	12.138 ***	12.030 ***	12.393 ***	12.497 ***	12.290 ***
	(0.177)	(0.244)	(0.249)	(0.226)	(0.317)	(0.316)
F-stat	111.15	55.17	56.59	91.19	40.23	50.27
N	14753	7181	7572	10753	5260	5493

Notes: In all specifications we include indicators for the year of birth and the country of residence of the parent. We also include a cubic polynomial in the birth year of the child (in deviations from 1970). Robust estimated standard errors are included. Significance: *** $p \leq .01$, ** $.01 < p \leq .05$, * $.05 < p \leq .10$.

Table 3: Reduced form estimates for child schooling as a function of parental hardship.

	Mother			Father		
	All	Daughter	Son	All	Daughter	Son
Hunger duration	-0.049 ***	-0.057 ***	-0.041 **	-0.000	0.010	-0.007
	(0.014)	(0.020)	(0.020)	(0.014)	(0.021)	(0.018)
War duration	-0.069 **	-0.128 ***	-0.020	-0.053	-0.078	-0.027
	(0.033)	(0.049)	(0.045)	(0.036)	(0.052)	(0.051)
Rural area	-0.411 ***	-0.295 ***	-0.532 ***	-0.240 ***	-0.225 **	-0.257 ***
	(0.058)	(0.082)	(0.081)	(0.064)	(0.091)	(0.091)
Few books	-1.224 ***	-1.284 ***	-1.158 ***	-1.175 ***	-1.101 ***	-1.239 ***
	(0.057)	(0.081)	(0.080)	(0.064)	(0.091)	(0.090)
Low-skilled breadw	-0.439 ***	-0.364 ***	-0.512 ***	-0.317 ***	-0.395 ***	-0.257 **
	(0.064)	(0.091)	(0.089)	(0.074)	(0.105)	(0.104)
Grandpa absent	-0.164 *	-0.086	-0.242 *	-0.046	0.037	-0.115
	(0.089)	(0.128)	(0.125)	(0.104)	(0.145)	(0.148)
Grandma absent	-0.446 ***	-0.302	-0.606 ***	-0.052	-0.193	0.054
	(0.137)	(0.186)	(0.201)	(0.165)	(0.220)	(0.245)
Female child	0.086 *			0.068		
	(0.051)			(0.058)		
Constant	14.381 ***	14.380 ***	14.478 ***	14.291 ***	14.457 ***	14.199 ***
	(0.153)	(0.228)	(0.201)	(0.161)	(0.221)	(0.226)
N	14753	7181	7572	10753	5260	5493

Notes: In all specifications we include indicators for the year of birth and the country of residence of the parent. We also include a cubic polynomial in the birth year of the child (in deviations from 1970). Robust estimated standard errors are included. Significance: *** $p \leq .01$, ** $.01 < p \leq .05$, * $.05 < p \leq .10$.

Table 4: 2SLS estimates for child schooling as a function of parental schooling.

	Mother			Father		
	All	Daughter	Son	All	Daughter	Son
Ed parent	0.254 ***	0.348 ***	0.163 *	0.075	0.082	0.055
	(0.062)	(0.087)	(0.087)	(0.058)	(0.086)	(0.080)
Rural area	-0.153 *	0.055	-0.367 ***	-0.164 *	-0.132	-0.207 *
	(0.082)	(0.117)	(0.115)	(0.084)	(0.131)	(0.111)
Few books	-0.610 ***	-0.446 *	-0.761 ***	-0.960 ***	-0.877 ***	-1.076 ***
	(0.165)	(0.233)	(0.234)	(0.189)	(0.267)	(0.268)
Low-skilled breadw	-0.356 ***	-0.243 **	-0.465 ***	-0.309 ***	-0.385 ***	-0.252 **
	(0.065)	(0.095)	(0.091)	(0.072)	(0.102)	(0.102)
Grandpa absent	-0.227 ***	-0.185	-0.281 **	-0.060	0.026	-0.131
	(0.087)	(0.126)	(0.122)	(0.102)	(0.142)	(0.146)
Grandma absent	-0.331 **	-0.221	-0.497 **	-0.067	-0.161	0.019
	(0.136)	(0.187)	(0.202)	(0.162)	(0.214)	(0.244)
Female child	0.075			0.067		
	(0.049)			(0.057)		
Constant	11.330 ***	10.159 ***	12.532 ***	13.362 ***	13.431 ***	13.525 ***
	(0.736)	(1.029)	(1.044)	(0.732)	(1.096)	(0.989)
J-test	1.7	0.1	1.8	0.7	1.5	0.0
p-value	0.186	0.706	0.176	0.393	0.215	0.995
N	14753	7181	7572	10753	5260	5493

Notes: In all specifications we include indicators for the year of birth and the country of residence of the parent. We also include a cubic polynomial in the birth year of the child (in deviations from 1970). Robust estimated standard errors are included. Significance: *** $p \leq .01$, ** $.01 < p \leq .05$, * $.05 < p \leq .10$.

Table 5: OLS estimates for child education as a function of parental education.

	Mother			Father		
	All	Daughter	Son	All	Daughter	Son
Ed parent	0.238 ***	0.247 ***	0.228 ***	0.225 ***	0.222 ***	0.228 ***
	(0.008)	(0.010)	(0.011)	(0.007)	(0.010)	(0.010)
Rural area	-0.169 ***	-0.042	-0.302 ***	-0.018	0.023	-0.060
	(0.056)	(0.080)	(0.080)	(0.062)	(0.089)	(0.087)
Few books	-0.650 ***	-0.700 ***	-0.596 ***	-0.506 ***	-0.468 ***	-0.535 ***
	(0.058)	(0.083)	(0.081)	(0.063)	(0.090)	(0.089)
Low-skilled breadw	-0.361 ***	-0.282 ***	-0.443 ***	-0.295 ***	-0.373 ***	-0.234 **
	(0.062)	(0.089)	(0.086)	(0.071)	(0.100)	(0.100)
Grandpa absent	-0.224 ***	-0.161	-0.291 **	-0.094	-0.003	-0.176
	(0.086)	(0.124)	(0.121)	(0.100)	(0.139)	(0.142)
Grandma absent	-0.338 **	-0.243	-0.455 **	-0.103	-0.138	-0.089
	(0.133)	(0.182)	(0.195)	(0.158)	(0.211)	(0.231)
Female child	0.076			0.064		
	(0.049)			(0.056)		
Constant	11.518 ***	11.355 ***	11.766 ***	11.536 ***	11.693 ***	11.447 ***
	(0.174)	(0.252)	(0.236)	(0.178)	(0.249)	(0.248)
N	14753	7181	7572	10753	5260	5493

Notes: In all specifications we include indicators for the year of birth and the country of residence of the parent. We also include a cubic polynomial in the birth year of the child (in deviations from 1970). Robust estimated standard errors are included. Significance: *** $p \leq .01$, ** $.01 < p \leq .05$, * $.05 < p \leq .10$.

Table 6: Results for experiencing hardships when aged 6–16 during the WW2 period (1936–1948).

	Mother			Father		
	All	Daughter	Son	All	Daughter	Son
			Reduced form			
Hunger duration	-0.111 ***	-0.073 *	-0.150 ***	-0.001	0.044	-0.035
	(0.031)	(0.044)	(0.044)	(0.027)	(0.041)	(0.036)
War duration	0.029	-0.057	0.111 *	-0.068	-0.099	-0.036
	(0.044)	(0.064)	(0.061)	(0.045)	(0.065)	(0.064)
			First stage			
Hunger duration	-0.239 ***	-0.266 ***	-0.214 ***	-0.201 ***	-0.213 ***	-0.189 ***
	(0.033)	(0.048)	(0.046)	(0.029)	(0.045)	(0.038)
War duration	-0.227 ***	-0.206 ***	-0.252 ***	-0.371 ***	-0.348 ***	-0.392 ***
	(0.050)	(0.071)	(0.070)	(0.056)	(0.080)	(0.078)
F-stat	39.50	21.28	18.79	51.19	23.75	26.76
			2SLS			
Ed parent	0.288 ***	0.275 *	0.262 *	0.096	0.027	0.132
	(0.103)	(0.141)	(0.148)	(0.082)	(0.122)	(0.114)
N	14753	7181	7572	10753	5260	5493

Notes: We now define hardship, as having lived in a war region between age 6 and 16 (school age) or having experienced hunger in the same age range. These two indicators take value 1 if the hardship spells are observed during the WW2 period (years 1936–1948) and 0 otherwise. In all specifications we include indicators for the year of birth and the country of residence of the parent. We also include a cubic polynomial in the birth year of the child (in deviations from 1970). Robust estimated standard errors are included. Significance: *** $p \leq .01$, ** $.01 < p \leq .05$, * $.05 < p \leq .10$.

Table 7: Placebo regression: Hardship when aged 18–30.

	Mother			Father		
	All	Daughter	Son	All	Daughter	Son
			Reduced form			
Hunger duration	-0.104***	-0.144***	-0.076	-0.046	-0.030	-0.057
	(0.037)	(0.043)	(0.060)	(0.045)	(0.076)	(0.052)
War duration	-0.164	-0.382	0.204	0.391	0.440	0.287
	(0.266)	(0.382)	(0.371)	(0.284)	(0.442)	(0.367)
			First stage			
Hunger duration	-0.280***	-0.277***	-0.286***	-0.199***	-0.263***	-0.141**
	(0.042)	(0.062)	(0.057)	(0.047)	(0.071)	(0.058)
War duration	-0.067	0.181	-0.303	-0.017	-0.203	0.130
	(0.237)	(0.315)	(0.355)	(0.309)	(0.459)	(0.419)
F-stat	21.85	10.14	13.27	9.07	7.02	3..01
			2SLS			
Educ mother	0.376***	0.497***	0.247	0.206	0.059	0.429
	(0.134)	(0.168)	(0.205)	0.206	0.059	0.429
N	14753	7181	7572	10753	5260	5493

Notes: We now define hardship, as having lived in a war region between age 18 and 30 or number of years experiencing hunger in the same age range. In all specifications we include indicators for the year of birth and the country of residence of the parent. We also include a cubic polynomial in the birth year of the child (in deviations from 1970). Robust estimated standard errors are included. Significance: *** $p \leq .01$, ** $.01 < p \leq .05$, * $.05 < p \leq .10$.

Table 8: The effect of war-related hardships on parents' health conditions during childhood

	Mother		Father	
	Miss school	Hospitalized	Miss school	Hospitalized
War duration	-0.002	0.002	-0.002	-0.004
	(0.005)	(0.005)	(0.005)	(0.005)
Hunger duration	0.004**	0.001	0.003	0.003
	(0.002)	(0.002)	(0.002)	(0.002)
	(0.018)	(0.019)	(0.021)	(0.020)
R^2	0.007	0.007	0.001	0.003
N	6344	6344	4768	4768

Notes: We now define hardship, as having lived in a war region between age 6 and 16 (school age) or having experienced hunger in the same age range. These two indicators take value 1 if the hardship spells are observed during the WW2 period (1936-1948), and 0 otherwise. In all specifications we include indicators for the year of birth and the country of residence of the parent. We also include a cubic polynomial in the birth year of the child (in deviations from 1970). Robust estimated standard errors are included. Significance: *** $p \leq .01$, ** $.01 < p \leq .05$, * $.05 < p \leq .10$.

Table 9: Interacting hardship indicators with an indicator of SES.

	Mother-All		Mother-Daughter		Mother-Son	
	RF	2SLS	RF	2SLS	RF	2SLS
Educ mother		0.283 ***		0.373 ***		0.206 **
		(0.064)		(0.094)		(0.086)
Female child	0.084 *	0.079	0.000		0.000	
	(0.050)	(0.048)	(.)		(.)	
Hunger duration	-0.071 ***		-0.074 ***		-0.072 ***	
	(0.018)		(0.025)		(0.026)	
War duration	-0.007		-0.094 *		0.083 *	
	(0.035)		(0.050)		(0.048)	
Hunger dur*SES	-0.053 *		-0.053		-0.060	
	(0.028)		(0.040)		(0.039)	
War dur*SES	0.224 ***		0.122		0.336 ***	
	(0.052)		(0.075)		(0.073)	
SES	1.174 ***	0.520 ***	1.292 ***	0.314	1.058 ***	0.708 ***
	(0.071)	(0.196)	(0.101)	(0.284)	(0.100)	(0.269)
Constant	13.624 ***	10.634 ***	13.708 ***	9.749 ***	13.633 ***	11.471 ***
	(0.147)	(0.668)	(0.218)	(0.975)	(0.194)	(0.902)
F-stat		50.1		23.5		27.4
J-test		21.6		4.2		23.9
p-value		0.000		0.243		0.000
N	15373	15373	7506	7506	7867	7867
	Father-All		Father-Daughter		Father-Son	
	RF	2SLS	RF	2SLS	RF	2SLS
Educ father		0.144 ***		0.155 **		0.125 *
		(0.050)		(0.072)		(0.067)
Female child	0.084	0.077	0.000		0.000	
	(0.057)	(0.055)	(.)		(.)	
Hunger duration	-0.038 *		-0.013		-0.064 **	
	(0.022)		(0.034)		(0.028)	
War duration	0.053		0.034		0.078	
	(0.046)		(0.065)		(0.066)	
Hunger dur*SES	-0.070 **		-0.039		-0.103 **	
	(0.033)		(0.051)		(0.041)	
War dur*SES	0.303 ***		0.294 ***		0.316 ***	
	(0.074)		(0.109)		(0.102)	
SES	1.288 ***	1.028 ***	1.394 ***	1.102 ***	1.186 ***	0.991 ***
	(0.113)	(0.201)	(0.161)	(0.294)	(0.158)	(0.270)
Constant	14.029 ***	12.403 ***	14.311 ***	12.555 ***	13.850 ***	12.452 ***
	(0.150)	(0.587)	(0.206)	(0.862)	(0.209)	(0.791)
F-stat		59.4		28.9		31.7
J-test		18.6		7.0		13.4
p-value		0.000		0.071		0.004
N	11276	11276	5507	5507	5769	5769

Notes: In all specifications we include indicators for the year of birth of the mother and the country of residence of the mother at the time of the SHARE interview. We also include a cubic polynomial in the birth year of the child (in deviations from 1970). Robust estimated standard errors in parenthesis. Significance: *** $p \leq .01$, ** $.01 < p \leq .05$, * $.05 < p \leq .10$.

Table 10: Using more hardship indicators.

	Mother			Father		
	All	Daughter	Son	All	Daughter	Son
			Reduced form			
Hunger duration	-0.039***	-0.047**	-0.031	0.009	0.014	0.008
	(0.015)	(0.021)	(0.020)	(0.014)	(0.021)	(0.018)
War duration	-0.066**	-0.128***	-0.015	-0.052	-0.077	-0.025
	(0.033)	(0.049)	(0.045)	(0.036)	(0.052)	(0.051)
Fin. hardship duration	-0.048***	-0.049**	-0.049***	-0.057***	-0.032	-0.082***
	(0.014)	(0.024)	(0.017)	(0.017)	(0.023)	(0.024)
Stress duration	0.002	0.037	-0.020	0.077**	0.046	0.128**
	(0.031)	(0.053)	(0.037)	(0.034)	(0.048)	(0.051)
Constant	14.390***	14.386***	14.486***	14.297***	14.461***	14.207***
	(0.153)	(0.228)	(0.200)	(0.161)	(0.221)	(0.226)
N	14753	7181	7572	10753	5260	5493
			First stage			
Hunger duration	-0.116***	-0.130***	-0.105***	-0.112***	-0.122***	-0.103***
	(0.015)	(0.022)	(0.020)	(0.016)	(0.025)	(0.021)
War duration	-0.383***	-0.403***	-0.368***	-0.458***	-0.430***	-0.485***
	(0.036)	(0.053)	(0.050)	(0.046)	(0.066)	(0.064)
Fin. hardship duration	-0.110***	-0.081***	-0.133***	-0.100***	-0.087***	-0.115***
	(0.015)	(0.023)	(0.021)	(0.022)	(0.034)	(0.026)
Stress duration	0.030	0.039	0.024	0.112**	0.050	0.191**
	(0.032)	(0.047)	(0.043)	(0.055)	(0.069)	(0.088)
Constant	12.091***	12.150***	12.052***	12.405***	12.511***	12.300***
	(0.176)	(0.243)	(0.248)	(0.227)	(0.317)	(0.316)
F-stat	68.5	31.6	37.5	51.8	21.8	31.4
N	14753	7181	7572	10753	5260	5493
			2SLS			
Educ mother	0.285***	0.372***	0.213***	0.151***	0.118	0.179**
	(0.055)	(0.083)	(0.070)	(0.054)	(0.082)	(0.071)
Constant	10.966***	9.878***	11.949***	12.437***	12.984***	12.029***
	(0.657)	(0.994)	(0.846)	(0.675)	(1.046)	(0.875)
J-test	3.9	1.2	4.4	12.4	3.7	12.2
p-value	0.272	0.759	0.219	0.006	0.293	0.007
N	14753	7181	7572	10753	5260	5493

Notes: We now use two additional indicators of hardship to war and hunger, namely financial hardship and stress. All of them refer to the the period 0-16, which is our baseline specification. In all specifications we include indicators for the year of birth and the country of residence of the parent. We also include a cubic polynomial in the birth year of the child (in deviations from 1970). Robust estimated standard errors are included. Significance: *** $p \leq .01$, ** $.01 < p \leq .05$, * $.05 < p \leq .10$.

Table 11: Transition matrix of mother level of education and child level of education (row percentages).

	Education of child			
	Less than HS	Only HS	College	Total
Education of mother				
Less than HS	30.5	47.4	22.1	100.0
Only HS	7.1	51.3	41.6	100.0
College	4.0	25.5	70.5	100.0
Total	21.1	45.6	33.3	100.0
Education of father				
Less than HS	32.7	45.8	21.5	100.0
Only HS	7.2	53.7	39.1	100.0
College	4.1	26.7	69.2	100.0
Total	19.2	44.5	36.3	100.0

Notes: This table shows the conditional probability that children's education is "Less than high school" , "Only high school", and "College or more", for each category of mother's and father's education. These variables have been recoded based on the ISCED-97 classification with seven levels used in the SHARE survey: "No school", "Elementary", "Lower Secondary", "High school", "Vocational", "College", and "Post-graduate diploma".

Table 12: The effect of parental hardship on child level of education. Linear probability model.

	Mother			Father		
	All	Daughter	Son	All	Daughter	Son
	Child education: Less than high school					
	Reduced form					
Hunger duration	0.008 ***	0.006 **	0.009 ***	0.002	0.004	0.001
	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)
War duration	0.016 ***	0.020 ***	0.014 **	0.011 **	0.012 *	0.010
	(0.004)	(0.006)	(0.006)	(0.005)	(0.007)	(0.006)
Constant	-0.009	-0.026	-0.027	0.026	-0.003	0.037
	(0.019)	(0.026)	(0.026)	(0.019)	(0.026)	(0.027)
	2SLS					
Educ parent	-0.048 ***	-0.046 ***	-0.051 ***	-0.022 ***	-0.029 **	-0.015
	(0.008)	(0.012)	(0.012)	(0.008)	(0.012)	(0.011)
Constant	0.573 ***	0.531 ***	0.585 ***	0.295 ***	0.353 **	0.222 *
	(0.100)	(0.139)	(0.139)	(0.097)	(0.146)	(0.130)
F-stat	104.0	55.2	56.6	88.7	39.2	48.8
J-test	0.9	0.1	2.0	0.2	0.0	0.4
p-value	0.338	0.806	0.162	0.646	0.949	0.537
	Child education: Only high school					
	Reduced form					
Hunger duration	-0.003	0.002	-0.007 ***	0.002	-0.004	0.004
	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)
War duration	-0.008	-0.000	-0.015 **	0.011 **	0.008	-0.000
	(0.005)	(0.007)	(0.007)	(0.005)	(0.008)	(0.008)
Constant	0.563 ***	0.555 ***	0.572 ***	0.026	0.530 ***	0.469 ***
	(0.025)	(0.035)	(0.035)	(0.019)	(0.039)	(0.038)
	2SLS					
Ed parent	0.020 **	-0.004	0.046 ***	-0.022 ***	0.000	-0.011
	(0.009)	(0.013)	(0.014)	(0.008)	(0.014)	(0.013)
Constant	0.316 ***	0.605 ***	0.016	0.295 ***	0.526 ***	0.605 ***
	(0.114)	(0.157)	(0.163)	(0.097)	(0.178)	(0.159)
F-stat	104.0	55.2	56.6	88.7	39.2	48.8
J-test	0.0	0.2	0.2	0.2	2.5	1.4
p-value	0.971	0.647	0.623	0.646	0.111	0.231
N	14815	7181	7572	10792	5282	5510

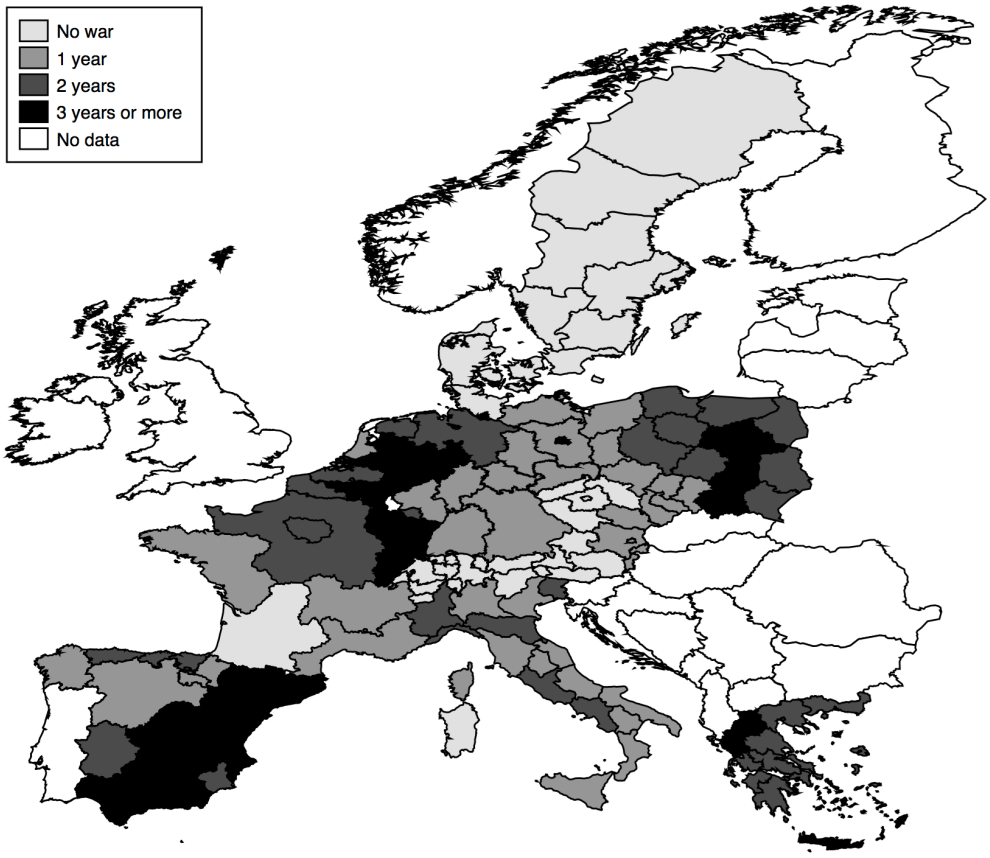
Notes: In all specifications we include indicators for the year of birth of the mother and the country of residence of the mother at the time of the SHARE interview. We also include a cubic polynomial in the birth year of the child. Estimated standard errors are clustered at the country and birth cohort level.
Significance: *** $p \leq .01$, ** $.01 < p \leq .05$, * $.05 < p \leq .10$.

Table 13: Alternative specification using country fixed effects.

	Mother			Father		
	All	Daughter	Son	All	Daughter	Son
			Reduced form			
Hunger duration	-0.054***	-0.062***	-0.046**	-0.004	0.009	-0.014
	(0.014)	(0.020)	(0.019)	(0.013)	(0.021)	(0.018)
War duration	-0.107***	-0.100*	-0.117**	-0.085**	-0.050	-0.118**
	(0.036)	(0.054)	(0.049)	(0.041)	(0.058)	(0.057)
Constant	13.215***	13.338***	13.200***	13.194***	13.447***	13.021***
	(0.175)	(0.261)	(0.231)	(0.188)	(0.265)	(0.260)
N	14753	7181	7572	10753	5260	5493
			First stage			
Hunger duration	-0.112***	-0.122***	-0.105***	-0.111***	-0.120***	-0.103***
	(0.014)	(0.021)	(0.019)	(0.015)	(0.023)	(0.019)
War duration	-0.132***	-0.129**	-0.136**	-0.264***	-0.190***	-0.332***
	(0.040)	(0.058)	(0.054)	(0.050)	(0.073)	(0.070)
Constant	8.753***	8.761***	8.776***	10.508***	10.364***	10.638***
	(0.177)	(0.248)	(0.247)	(0.228)	(0.329)	(0.310)
N	14753	7181	7572	10753	5260	5493
			2SLS			
Educ parent	0.538***	0.546***	0.521***	0.150*	0.009	0.253**
	(0.115)	(0.158)	(0.163)	(0.089)	(0.145)	(0.113)
Constant	8.463***	8.517***	8.567***	11.570***	13.308***	10.292***
	(0.982)	(1.348)	(1.408)	(0.919)	(1.488)	(1.175)
F-stat	37.9	19.2	18.9	43.5	18.1	26.0
J-test	1.0	0.3	1.0	2.2	0.9	0.9
p-value	0.307	0.567	0.324	0.136	0.353	0.346
N	14753	7181	7572	10753	5260	5493

Notes: We now consider an alternative specification where we account for country fixed effects instead of country-group fixed effect, with Italy being the excluded category. All the other controls remain the same. In all specifications we include indicators for the year of birth and the country of residence of the parent. We also include a cubic polynomial in the birth year of the child (in deviations from 1970). Robust estimated standard errors are included. Significance: *** $p \leq .01$, ** $.01 < p \leq .05$, * $.05 < p \leq .10$.

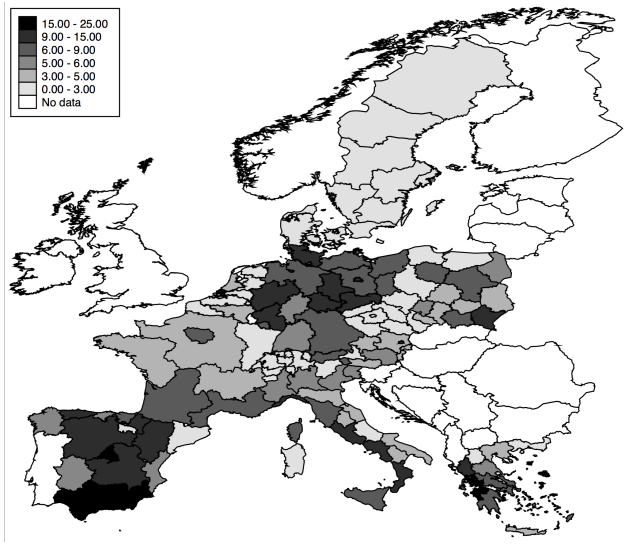
Figure 1: Regional exposure to major war events in Europe, 1936–1945.



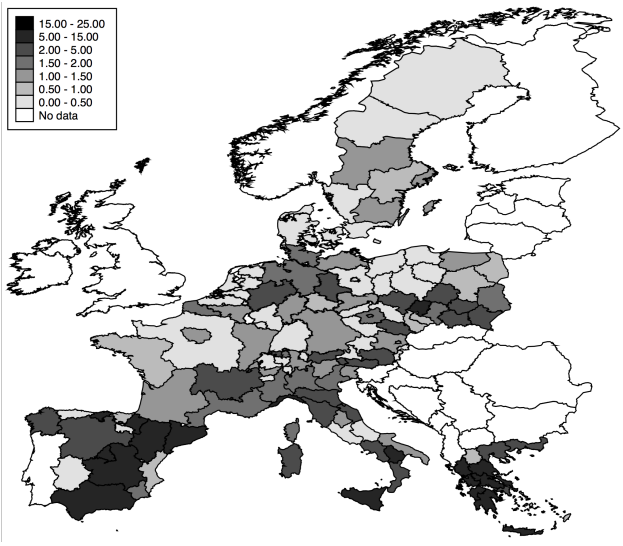
Notes: The figure shows for how many years each European region was exposed to main war events in 1936–1945. The shading in the map becomes darker as the number of years increases (the darkest color corresponds to 3 years or more).

Figure 2: Geography of hardship in Europe between 1936–1948.

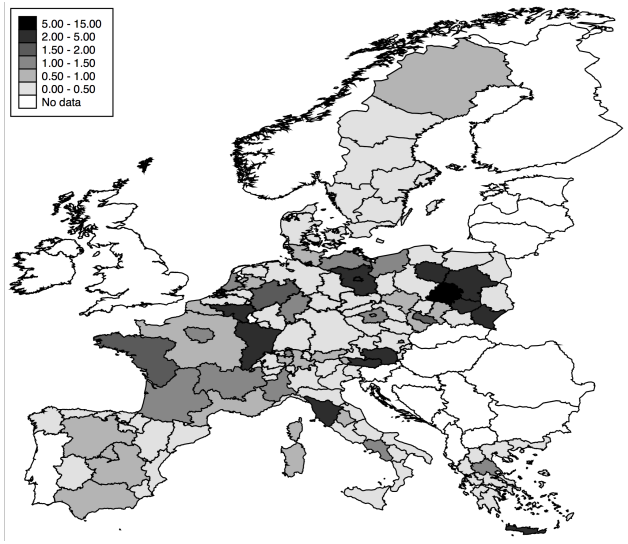
(a) Hunger



(b) Financial hardship



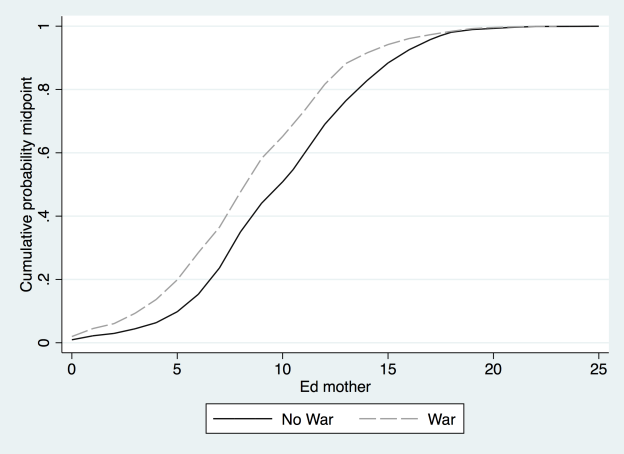
(c) Stress

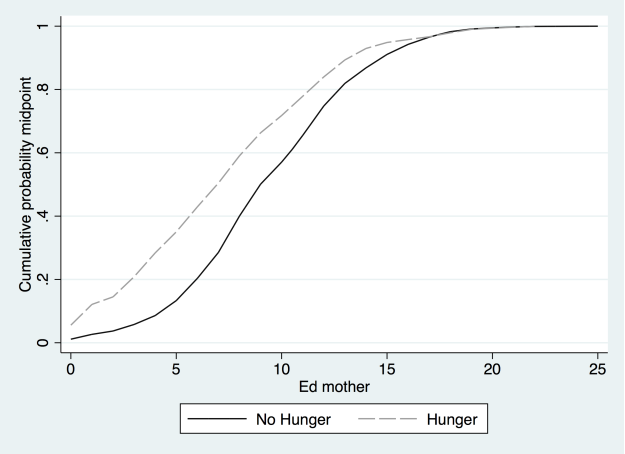


Notes: The figure shows the percentage of parents who report suffering hardship in each region averaged over the period 1936–1948. The shading in the map becomes darker as the percentage of parents who report having suffered a given hardship increases.

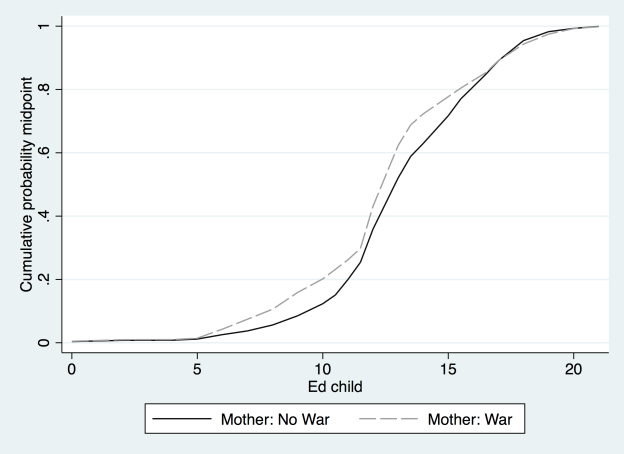
Figure 3: Distribution of mother and child years of schooling by maternal war exposure and hunger experience.

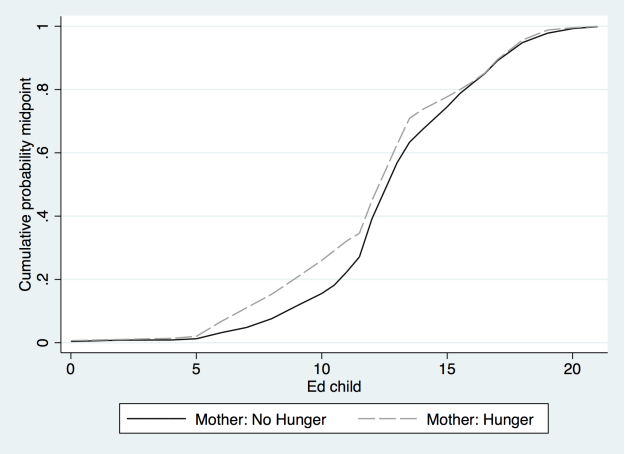
(a) Mother's years of schooling





(b) Child years of schooling

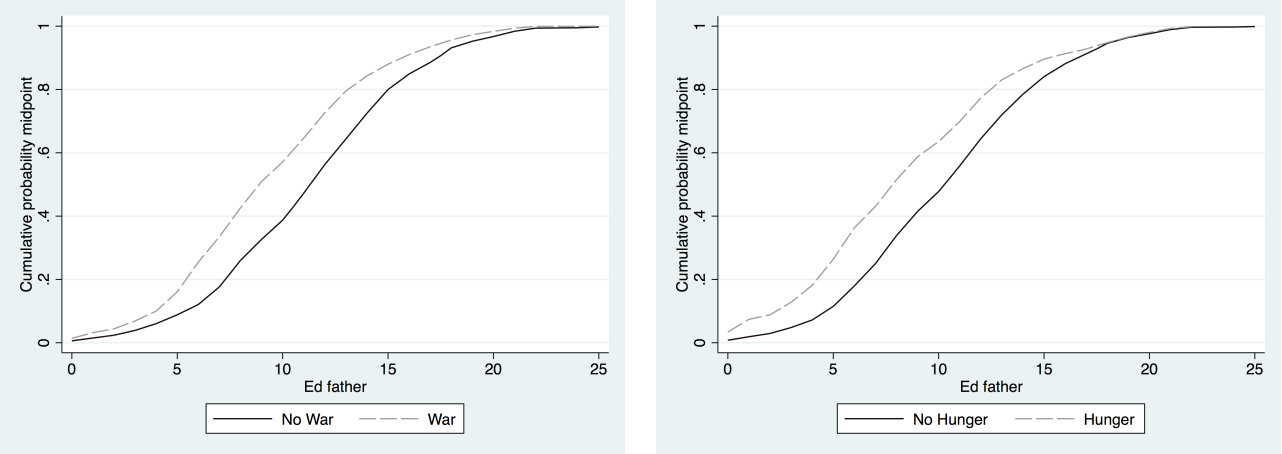




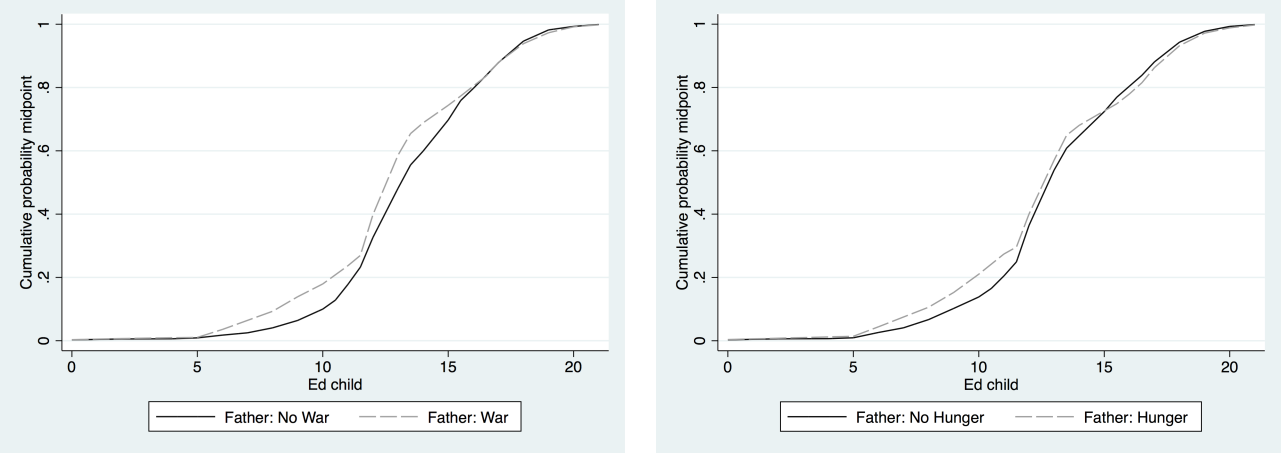
Note: We consider the cohorts of mothers born in 1926–1949 and the cohorts of children born in 1951–1981.

Figure 4: Distribution of father and child years of schooling by paternal war exposure and hunger experience.

(a) Father's years of schooling



(b) Child years of schooling



Note: We consider the cohorts of fathers born in 1926–1949 and the cohort of children born in 1951–1981.

Table A1: Interacting hardship indicators with indicators of family background. Mother.

	All		Daughter		Son	
	RF	2SLS	RF	2SLS	RF	2SLS
Educ mother		0.202***		0.251***		0.147*
		(0.063)		(0.084)		(0.090)
Female child	0.093*	0.081*				
	(0.050)	(0.049)				
Hunger duration	0.005		-0.036		-0.074	
	(0.049)		(0.076)		(0.076)	
War duration	0.043		-0.047		-0.635***	
	(0.074)		(0.107)		(0.114)	
Hunger dur*Few books	-0.006		0.026		-0.031	
	(0.041)		(0.062)		(0.063)	
War dur*Few books	-0.164***		-0.073		0.050	
	(0.056)		(0.082)		(0.086)	
Hunger dur*Low skilled breadw	-0.051*		-0.060		0.007	
	(0.029)		(0.044)		(0.038)	
War dur*Low skilled breadw	-0.071		-0.028		0.090	
	(0.060)		(0.086)		(0.084)	
Hunger dur*Rooms pc	-0.036		-0.024		-0.006	
	(0.047)		(0.070)		(0.082)	
War dur*Rooms pc	-0.020		-0.068		0.309***	
	(0.071)		(0.099)		(0.112)	
Few books	-0.870***	-0.615***	-1.013***	-0.584***	-1.946***	-0.650***
	(0.070)	(0.138)	(0.099)	(0.190)	(0.109)	(0.194)
Rural area	-0.389***	-0.199**	-0.289***	-0.041	-0.935***	-0.369***
	(0.057)	(0.080)	(0.081)	(0.111)	(0.087)	(0.112)
Low-skilled breadw	-0.327***	-0.375***	-0.276**	-0.279***	-0.302***	-0.472***
	(0.081)	(0.064)	(0.116)	(0.091)	(0.114)	(0.089)
Grandpa absent	-0.188**	-0.210**	-0.118	-0.165	-0.010	-0.270**
	(0.090)	(0.086)	(0.130)	(0.124)	(0.133)	(0.120)
Grandma absent	-0.640***	-0.484***	-0.499***	-0.350*	-0.889***	-0.658***
	(0.137)	(0.141)	(0.188)	(0.191)	(0.219)	(0.208)
Rooms pc	1.013***	0.523***	1.070***	0.451**	2.123***	0.627***
	(0.093)	(0.162)	(0.122)	(0.211)	(0.139)	(0.240)
Constant	13.474***	11.485***	13.465***	10.933***	10.227***	12.170***
	(0.171)	(0.627)	(0.251)	(0.844)	(0.275)	(0.896)
F-stat		28.0		15.1		13.7
J-test		21.5		10.3		20.6
p-value		0.003		0.171		0.004
N	14655	14655	7137	7137	7518	7518

Notes: We now consider an alternative specification where we interact the hardship indicators with indicators of SES, that is family background when the mother was 10 years old. All the other controls remain the same. In all specifications we include indicators for the year of birth and the country of residence of the parent. We also include a cubic polynomial in the birth year of the child (in deviations from 1970). Robust estimated standard errors are included. Significance: *** $p \leq .01$, ** $.01 < p \leq .05$, * $.05 < p \leq .10$.

Table A2: Interacting hardship indicators with indicators of family background. Father.

	All		Daughter		Son	
	RF	2SLS	RF	2SLS	RF	2SLS
Educ father		0.140 **		0.140 *		0.119
		(0.057)		(0.080)		(0.078)
Female child	0.070	0.066				
	(0.058)	(0.056)				
Hunger duration	-0.014		-0.033		-0.000	
	(0.039)		(0.063)		(0.052)	
War duration	0.110		0.145		0.118	
	(0.076)		(0.113)		(0.109)	
Hunger dur*Few books	0.008		0.001		0.017	
	(0.032)		(0.049)		(0.043)	
War dur*Few books	-0.226 ***		-0.204 **		-0.265 ***	
	(0.063)		(0.090)		(0.089)	
Hunger dur*Low skilled breadw	0.039		0.055		0.027	
	(0.028)		(0.044)		(0.038)	
War dur*Low skilled breadw	-0.120 *		-0.236 **		-0.029	
	(0.070)		(0.102)		(0.096)	
Hunger dur*Rooms pc	0.022		0.074		-0.023	
	(0.040)		(0.063)		(0.054)	
War dur*Rooms pc	-0.016		-0.080		0.009	
	(0.070)		(0.109)		(0.097)	
Few books	-0.763 ***	-0.626 ***	-0.713 ***	-0.577 ***	-0.794 ***	-0.723 ***
	(0.086)	(0.158)	(0.123)	(0.213)	(0.120)	(0.226)
Rural area	-0.242 ***	-0.103	-0.210 **	-0.062	-0.273 ***	-0.162
	(0.064)	(0.083)	(0.091)	(0.126)	(0.091)	(0.109)
Low-skill breadw	-0.185 *	-0.278 ***	-0.174	-0.368 ***	-0.191	-0.205 **
	(0.098)	(0.071)	(0.141)	(0.101)	(0.138)	(0.100)
Grandpa absent	-0.134	-0.116	-0.092	-0.053	-0.151	-0.165
	(0.104)	(0.099)	(0.144)	(0.138)	(0.147)	(0.142)
Grandma absent	-0.173	-0.167	-0.280	-0.194	-0.124	-0.157
	(0.167)	(0.160)	(0.221)	(0.212)	(0.249)	(0.239)
Rooms pc	1.016 ***	0.684 ***	0.994 ***	0.622 ***	1.074 ***	0.801 ***
	(0.114)	(0.153)	(0.161)	(0.211)	(0.160)	(0.218)
Constant	13.377 ***	11.998 ***	13.532 ***	12.195 ***	13.259 ***	12.099 ***
	(0.187)	(0.608)	(0.258)	(0.879)	(0.265)	(0.820)
F-stat		26.8		13.7		13.8
J-test		21.7		15.4		11.6
p-value		0.003		0.031		0.115
N	10699	10699	5233	5233	5466	5466

Notes: We now consider an alternative specification where we interact the hardship indicators with indicators of SES, that is family background when the father was 10 years old. All the other controls remain the same. In all specifications we include indicators for the year of birth and the country of residence of the parent. We also include a cubic polynomial in the birth year of the child (in deviations from 1970). Robust estimated standard errors are included. Significance: *** $p \leq .01$, ** $.01 < p \leq .05$, * $.05 < p \leq .10$.

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