

## Age At Parents' Separation And Children Achievement: Evidence From France Using A Sibling Approach

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# Age At Parents' Separation And Children Achievement: Evidence From France Using A Sibling Approach

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## Abstract

This paper investigates the link between parental separation and children's achievement in their adulthood. Using a French dataset "Education-Training-Employment", the differences in age of the children at divorce, within a family, are examined in order to control for divorced families selection. The main interest of the paper lies in three particular outcomes : the number of years of schooling, earnings-weighted education, and social position. The results show that individuals whose parents separated have about one semester of schooling less than the children of non-divorced families, they also have lower quality of education and lower social position associated with wages from 4% to 9% lower than individuals who grew up with their two parents. All these estimated effects remain negative and significant within the family. Parental separation is more harmful for boys, or for individuals whose mother is less highly educated.

**JEL classification :** I20, J12

**Keywords:** Education, Divorce, Family Economics, Family Structure, Marital Dissolution

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# 1 Introduction

The share of children whose parents get separated increased from 3% for the generation born in 1946 to 15% for the generation born in 1988.<sup>1</sup> Despite a growing literature on the effect of parental separation on child's achievement, there is still no consensus on the magnitude of this effect. Several papers highlight that a large part of the effect of parental separation can be attributed to selection on unobserved family characteristics (Ermisch and Francesconi 2001 [20]; Björklund and Sundström 2006 [12]; Björklund et al. 2007 [10]); while the effect remains negative in Eastern Germany and Austria, even after accounting for selection (Francesconi et al. 2010 [21]; Frimmel et al. 2016 [22]). In this study, I provide new evidences about the link between parental separation and individuals' achievement in France, controlling for family fixed effect. I find a negative correlation between parental separation and children's achievement, even after controlling for family fixed effect. This contrasts with the assumption that the effect of divorce is mainly explained by family selection.

This paper offers two main contributions. The first is to investigate the heterogeneity of the link between parental separation and children's achievement according to several variables. Differences in social composition of divorced families across countries could explain differences in magnitude of the correlations between parental separation and children's achievements. I investigate if differences in mother's education, and cohort could reflect different effects of parental separation. Moreover, this paper contributes to the burgeoning literature on the impact of parental separation on the existing gender gap (see Brenøe and Lundberg 2016 [14]; Lundberg 2017 [28]).

The second contribution is to shed light on the French case. France is an interesting context in which to investigate this question, since it lies somewhere between the US and Scandinavian countries in terms of welfare expenditures for families with children, and in terms of inequality of opportunity (see Lefranc and Trannoy, 2005 [26]). Therefore, the French case can be helpful in understanding the impact of parental separation on children.

Parental separation may impact individual's achievement through different channels. First, parents resources may be affected by the parental separation. Parents resources could refer to economic resources and to time resources. From a theoretical perspective, it is well established that family background impacts child's achievement (Becker et al. 1976 [5], Becker and Tomes 1979 [6], 1994 [4], Carneiro and Heckman 2003 [15]). The wealthier the parents, the more they invest in their children's human capital; and consequently, the wealthier the child will be. A separation is an economic shock for the individuals. By separating, the couple loses all the gains from marriage such as production and consumption complementarity or risk pooling. They may have less economic resources to invest in child's human capital. They could be constrained to move, and the housing quality may be af-

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<sup>1</sup>Computation from the author on the Formation et Qualification Professionnelle (FQP) surveys, 2003 and 2014 waves.

affected. Leturcq and Panico (2018) [27] describe how income poverty and deprivation vary on average around parental separation. Using an event study, they show that leisure deprivation, such as not being able to afford holidays or paying activities such as cinema outings and sports, and material deprivation (housing quality) appear to drive the observed overall deprivation increase. Clark et al. (2015) [17] show that the effect of parental separation on children's outcomes decreases when income is controlled for. Besides, the custodial parent, to offset the loss of one wage, must increase working hours and may have less time to look after their child. A decrease in time spent with parents may be a driving channel as well.

Second, the parental separation may be a psychological shock for the child, especially if the level of conflict was low before the parental separation, which could mean that the separation was not expected (Booth and Amato 2001 [1]).

Nevertheless, parental separation could benefit to the child if it puts an end to a conflictual period (Booth and Amato 2001 [1]). This effect is however not confirmed for education, in Australia (Ribar et al., 2017 [32]) and in the United Kingdom (Clark et al., 2015 [17]).

On the other hand, conflict might be a source of selection, we could wonder about the effect of a "non-divorce", when the child remains in a conflictual family. This correlation between parental separation and conflict (or other latent characteristics) introduces some degree of endogeneity. Divorce would only be an indicator of conflictual families (Amato 2001 [2], Martin (2007) [29]).

A number of methods have been used to deal with the endogeneity issue. Using the variation in the gender ratio in the fathers' firm to instrument divorce, Frimmel et al. (2016)[22] find a negative and persistent impact of divorce in Austria. There is an upward bias. Bedard and Deschênes (2005) [7] use the gender of the first born to instrument separation in the US. A second method is the time differences exploitation (Piketty 2003 [31], Leturcq and Panico (2018) [27]), but this method cannot be used to study the impact of parental separation on children in their adulthood. A strand of the literature (Björklund and Sundström 2006 [12], Bratberg et al. 2014 [13], Ermisch and Francesconi 2001 [20], Francesconi et al. 2010 [21]) uses the variation in the age at divorce across siblings to estimate siblings-difference model. It cancels out the "family fixed effect", that catches all the characteristics that are common to siblings.

I follow this last strand of the literature using the FQP (*Formation et Qualification Professionnelle* - Education, Training and Occupation) surveys conducted by INSEE in 2003 and 2014. This is cross-sectional data. The sample is around 40 000 individuals for the 2003 wave and about 26 000 individuals for the 2014 wave. Information on siblings' outcomes is provided. The total sample includes more than 28 000 families. This guarantees enough significance power in the siblings-difference model. Three outcomes are analyzed: the number of years of schooling, the earnings-weighted education, which measures the quality of schooling that may be different from the quantity of schooling

in France, and the social position. The earnings-weighted education is the wage value associated with a particular degree as compared to not getting any degree. Social position is measured as the average of the earnings given the individual's characteristics.

I find a negative correlation between parental separation and children's outcomes, poorly explained by divorced family selection in France. These findings contrast with other studies that find a lower effect of parental separation after controlling for family fixed effect, and sometimes no significance at all. It reveals that there is a negative correlation between divorce and children's achievement in France, even after controlling for family fixed effect. There are several possible explanations. First, the larger number of observations - more than 28 000 families - means that not too much significance power is lost in the sibling-difference model. Second, divorce is random across latent characteristics on average. Nevertheless, it is possible that there are several types of divorced families with different latent characteristics, with opposite effects on the children's achievement, but these effects may compensate for each other.

The correlation between parental separation and children outcomes could differ across groups. Parental separation would be more harmful for boys (Frimmel et al. 2016 [22], Bertrand and Pan 2013 [9], Brenøe and Lundberg 2016 [14]), but it would depend on the considered outcomes (Lundberg 2017 [28]), girls suffer more from family background when internalising behaviours such as depression are considered, whereas the impact of family background is greater for boys when we consider externalising behaviour (school attendance...). This disadvantage does not persist into adulthood (Brenøe and Lundberg (2016) [14], Lundberg (2017) [28]). The findings of this paper contrast with theirs, finding that parental separation is more harmful for boys' educational attainment. Consequences of divorce are heterogeneous within divorced men and women according to their income, separation exacerbates existing inequalities (Ananat and Mickaels 2008 [3], Mcmanus et al. (2001) [30]). This paper investigates this heterogeneity at the child level. Parental separation is more harmful when the mother or the father is highly educated. I do not find differential effects for recent cohorts. The rest of the paper is organised as follows. In Section 2, a description of the dataset, the main variables, and some descriptive statistics are provided. The identification strategy is explained in Section 3. Section 4 shows the results. In Section 5, the sensitivity of the results is checked. Section 6 concludes.

## 2 Data & Method

### 2.1 Data

**Data set and main variables** Data are taken from the FQP (*Formation et Qualification Professionnelle* - Education, Training and Occupation) surveys conducted by INSEE in 2003 and 2014. The FQP surveys conducted in 2003 and 2014 offer a representative sample of the French population aged 18 to 65 years old, and who live in France at the date of the survey. This is cross-sectional data. The sample is around 40 000 and 26 000 observations for the 2003 wave and for the 2014 wave, respectively. There is detailed information on individual's education, occupation, their earnings, their parents education and professional group. The respondent gives information about one of their siblings: their education level and occupation. The sibling is picked randomly. It is also known if and when the parents were divorced or separated, the type of custody, and if there is a step-parent. This information is reported *a posteriori* by survey respondents and refer to the time when the respondent left the schooling system. Even if the survey team puts a lot of effort to avoid recall errors, errors of measurement due to recall errors are still possible<sup>2</sup>.

Unfortunately, the question about a parental separation is asked at the end of schooling. This could be a source of bias, since the higher my education level, the later I would declare my parent's separation. For example, individuals whose parents separate when they are 23 are supposed to declare it only if they are still at school, and therefore are more likely to do longer schooling. This could artificially lead to higher educated individuals among the separated families. I perform a robustness check to investigate the existence of this potential question bias, and reject it.

#### Measuring child's achievement<sup>3</sup>

*Number of years of schooling.* We take the highest degree achieved by the individual. To have a continuous variable for educational attainment, I associate with each degree, a number of years of schooling. On the respondents sample, I compute the actual number of years of schooling after the primary class "CP" from the year of the end of schooling and the year of birth (year of the end of schooling - year of birth - 6). Second, the number of years of schooling is regressed on the highest degree, gender, year of birth, its quadratic term, the age and its quadratic term and interaction terms, it is then predicted for individuals and their siblings. To avoid an over-estimation of educational attainment for individuals who repeat many classes or temporarily suspend their education, the median years of schooling is associated with each degree by cohort.

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<sup>2</sup>The FQP team puts a lot of effort to have good retrospective data. They fill a timetable with the respondent with all the major life events, to make it easier for them to remember the date of each event. They cross check all the events together: what happened at school with what happened in their family. Even if this puts the respondent in a good context to reduce recall errors and insist on the importance of providing the right date, recall errors are still possible.

<sup>3</sup>A more detailed description of the predictions and the estimations of the outcomes are available in Appendix A 2

*Social Position.* Social position is measured as the average annual earnings, given the individual’s characteristics such as occupation and highest degree. To measure the social position, the earnings is regressed for each gender, on the respondents sample<sup>4</sup> on highest degree, year of birth, its quadratic term, the age and its quadratic term along with interaction terms, as previously; dummies for the profession categories (31 categories) and interaction terms are added (see Björklund and Jäntti, 1997 [11] for example). This estimation is carried out for full-time workers, using the Heckman procedure to account for the exclusion of part-time workers and the inactive. The selection equation takes into account the marital status and the number of children.

*Earnings-weighted education.* The French education system is specific; for the same number of years of schooling, it is possible to obtain degrees of diverse quality. In an attempt to take into account the quality of the degree, the earnings-weighted education is examined for each degree (see Ben-Halima et al. (2014) [8], Björklund and Sundström (2006) [12]). For each gender, the previous earnings equation is used to reveal the contribution of each degree to the wage compared to someone who does not have any degree. The two measures of education differ in the ranking of the degrees (See Figure A.1) .

For each outcome, we use the predicted outcomes for both siblings, even for the respondent, since we need comparable measures for both of them. Summary of the outcomes is given in Table 1. The first column reports the summary of the outcomes on the whole population of the dataset. The two other columns report it for the sample of interest splitted between the respondents and their sibling. The three subsamples are similar in terms of outcomes.<sup>5</sup>

*Measuring family structure* For a family, divorce is a dummy that equals 1 if the respondent’s parents get divorced or separated during the individual’s schooling, the individual’s age at divorce is also reported and a set of dummies corresponding to each age group at divorce is compiled. Cohabiting parents and married parents are considered equally here, since we do not have information on parent’s marriage.

*Measuring additional controls* Control variables are included: the individual’s sex, the region of birth, the year of birth that is centred on the average year of birth (1960), its quadratic term, the age and its quadratic term, and the birth order. Other controls are for family environment: parents’ degree and profession, dummies indicating whether the parents are born abroad, the mother’s year of birth (then implicitly for the age of the mother at birth), the number of siblings and its quadratic term. For parent’s education, seven categories of certificates and degrees are considered. From the bottom to the top, “No Diploma” means that the individual ends their schooling without any degree or at the end of the primary school. The second category indicates that the parent has a degree from primary

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<sup>4</sup>Since we don’t have information on the siblings’s earnings, this model is estimated only on the respondents’ sample.

<sup>5</sup>Please find a more detailed description of the estimation of the outcomes in Appendix A 2

Table 1 – Summary statistics for outcomes

	All	Respondents	Siblings
	mean/sd/min/max	mean/sd/min/max	mean/sd/min/max
Schooling	13.36	13.45	13.48
	2.81	2.82	2.77
	8.5	8.5	8.5
	18.3	18.3	18.3
Earnings-weighted Education	0.11	0.11	0.12
	0.12	0.12	0.12
	-0.1	-0.1	-0.1
	0.5	0.5	0.5
Social Position	10.23	10.25	10.22
	0.42	0.42	0.43
	7.4	7.7	7.4
	13.6	13.6	11.7
Observations	81533	28438	28438

*Note:* Schooling is a proxy for the number of years of schooling. Earnings-weighted education is the wage value of the individual’s highest degree (compared to no degree at all). Social position is the average earnings estimated separately for each gender on full-time workers with an Heckman procedure to account for the absence of part-time workers and inactive individuals. See Section A 2 for a more detailed description. The first column shows the summary statistics for the whole population of the dataset. The second column shows the summary statistics for our sample considering only the respondents, and the third column shows the summary statistics considering only the respondent’s siblings.

*Source:* Estimation sample drawn from the Dataset "Formation et Qualification Professionnelle" (INSEE), waves 2003 and 2014.

or secondary school: the "*CEP*"<sup>6</sup> which is a former school leaving certificate delivered at the end of primary school or the "*BEPC*"<sup>7</sup>, it is the French equivalent of the Junior High School Certificate, delivered at the age of 15. "*CAP/BEP*"<sup>8</sup> are vocational training certificates taken at the end of secondary school. The "Brevet professionnel ou de technicien" are vocational tracks, the degree is delivered three years after High School. The "*BAC*" (*Baccalauréat général ou technologique*) is the degree taken at the end of High School, generally at the age of 18. It is the French equivalent of A-levels (United Kingdom) or Abitur (Germany). "*BAC + 2*" means that the individual completed two years in higher education (after the *BAC*), this refers to the French vocational training or technical certificates *BTS*<sup>9</sup>, *DUT*<sup>10</sup>. Finally, "BAC+2 and more" corresponds to all certificates taken after a 3-year higher education course or more, referring to Bachelor, Master, degrees from engineering or business colleges, and PHD.

For professional occupation, eight categories are considered: Farmers, Artisan (Craftsman), White

<sup>6</sup>Certificat d’Etudes Primaires

<sup>7</sup>Brevet d’Etudes du Premier Cycle

<sup>8</sup>Certificat d’Aptitude Professionnelle/Brevet d’Etudes Professionnelles

<sup>9</sup>Brevet de Technicien Supérieur

<sup>10</sup>Diplômes universitaires de Technologie



Collar or Senior Executives, Mid-level Profession (intermediate occupations), Employee, Manual Worker, Retired, Other. Artisan refers to skilled workman, crafts person and storekeeper. Employee refers to administrative, sales or services occupations.

**Sample selection criteria** The sample is restricted to individuals who (a) are born between 1946 and 1978 for the 2003 wave, and between 1946 and 1989 for the 2014 wave, (b) for whom there is information on one sibling, (c) who experience the parental separation in a different age group and (d) that is not identified as a half sibling (born after a separation)<sup>11</sup>. Another more restricted sample requires that (e) the age difference with the referent sibling is lower than 10 years.

Condition (a) was imposed to have individuals old enough to end their schooling (25 years old), and therefore to have a correct information on their highest degree. I also exclude children born during the World War II since they might not be representative of individuals born later. Condition (b) is imposed by the identification strategy that uses differences between siblings. Although, this leads to exclude only children from the sample, a robustness check confirms that this does not affect the results.<sup>12</sup> Siblings difference model also imposes condition (c), it enables variations in the age group within a family in order to be able to estimate the effect of parental separation. Conditions (d) and (e) enable to have the most similar environment across siblings, to be able to assume a family *fixed* effect, that guarantees the assumptions made for the sibling-difference model, and consequently unbiased estimators in the siblings-difference model. Moreover, because it is not possible to identify half-siblings born before a divorce, this restriction could remove 50% of the older half-siblings.<sup>13</sup> Robustness checks are done to see if conditions (b) to (e) could affect the results, they are presented in Section 4.

The sample selection criteria result in a sample of about 56 000 siblings, and more than 50 000 siblings when condition (e) is applied. I perform sensitivity tests to see the effect of these restrictions. The model is also tested excluding respondents who declare a divorce after age 16 because of a potential question bias.

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<sup>11</sup>The question about the siblings does not distinguish between half-sibling, and natural sibling. Half-siblings are observable if they are born after the respondents' parents' separation. There are 302 siblings born after the respondents' parents' separation. All these siblings are excluded from the main analysis. Half of them have an age difference higher than 10. Therefore, when we focus on the subsample excluding siblings with an age difference higher than 10, we drop more than half of the older half-siblings.

<sup>12</sup>Except only children families, all family sizes are included.

<sup>13</sup>Since we can identify younger half siblings, who are born after divorce, we can observe the distribution of half siblings. Half of them have an age difference higher than 10 years.

## 2.2 Descriptive statistics

Comparing summary statistics concerning the non-divorced families and the divorced families of the respondents sample<sup>14</sup> (see Table A.12 in the Appendix, columns 1 and 2), we see that children in divorced families belong to younger cohorts on average. Mothers in divorced families are more educated on average than in the non-divorced families. The share of mothers who have a mid-level profession, who are employees, or manual workers is higher in divorced families, whereas the share of mothers who are farmers or who have an "other" profession (housewives), is higher in the non-divorced families. Divorced family fathers are also more educated, on average. They are more represented in mid-level professions, and employees, and less represented among farmers. Divorced families are more represented in Ile de France.

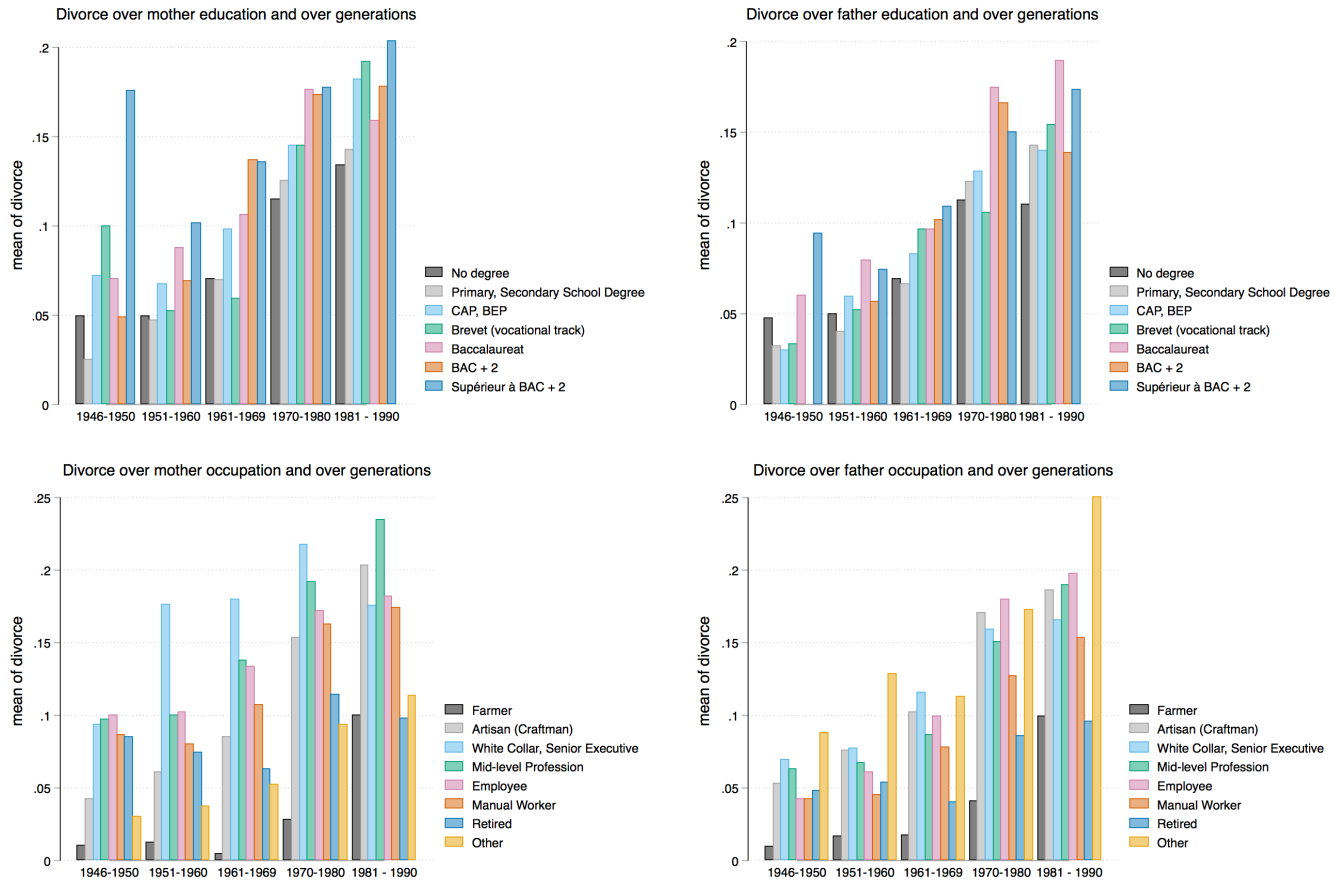
Comparing the respondents and their siblings in divorced families, the main difference concerns the age at divorce. The average age at divorce is a little higher in the siblings sample, mainly because the 18 and over are over-represented (see Table A.13). Individual responds to the question about a divorce *during schooling*. The respondents who are over age 18 at divorce will not declare a divorce if they have finished their schooling. But respondent's brother or sister can appear as a sibling after age 18, whether or not they were still at school. Table A.14 compares respondents and their siblings who experience a parental separation after the age of 16. Respondents are born latter. Their father is also less likely to be a manual worker. They also have less siblings in average. This information indicates the possible existence of a question bias that will be investigated later.

### An increase in separation in all social categories

Divorce has increased, and if it once was characteristic of only certain socio-economic categories, such as the most educated or "White Collar" professions, it is now extended to all social categories. Figure 1 shows that divorce has increased in all (parent's) education categories, especially for less-educated parents. Divorce has also increased in all occupation categories, especially "artisan", "mid-level professions" and employees, and also white collar or senior executives. For the generation born in 1946-1950, the share of children who experience a divorce is much higher when the mother is highly-educated, but this is less true for more recent generations. Looking at the father's profession, the same phenomenon is observed, for the generation born between 1946 and 1950, the share of children who experience a divorce is larger for those who have a father who is a white collar or senior executives, whereas today, divorce is represented in diverse social categories : the artisan (craftsman), white collar or senior executives, mid-level professions, employees and manual workers.

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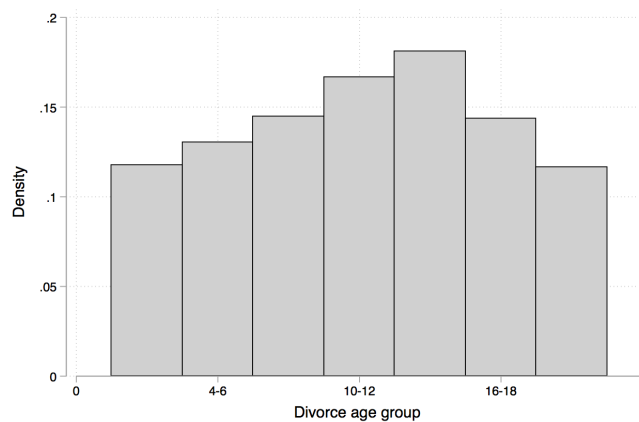
<sup>14</sup>The sample provided by the French FQP (Formation et Qualification Professionnelle) survey



**Fig. 1.** Share of children whose parents are separated according to parents education and occupation. Among children with mother with no degree, 5% experience a divorce for those born between 1946-1950, against nearly 15% for the 1981-1990 generation

### An increase in child's age at the parental separation across generations

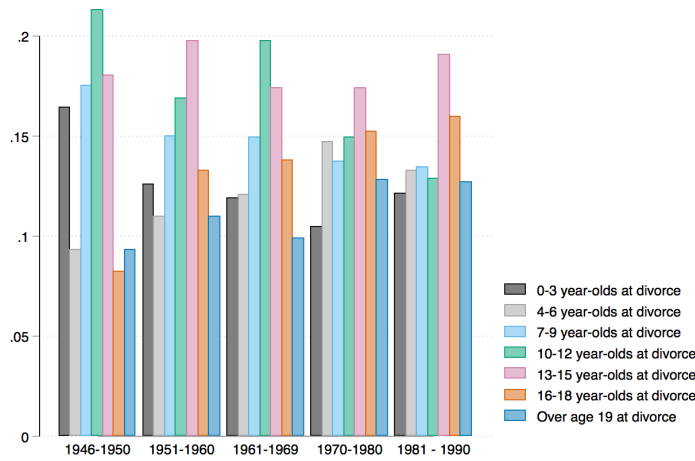
Figure 2 shows the distribution of the child's age at divorce over the whole sample, most of whom are around age 10. But around 10% are between 0 and 3 years old when divorce occurs. There is enough information in each age group to provide precise results.



**Fig. 2.** Distribution of divorced families children by age group

Figure 3 shows the distribution of children according to their age at divorce in each cohort of birth. Across generations, the proportion of children who were very young at divorce (0-3 years

old) has decreased, while the proportion of those who experience a divorce after the age of 18 has increased. It seems that, in younger generations, children are older when their parents get divorced. This could come from a change in the parents social composition or a generation effect. Observing the distribution of the child's age at divorce across the mother's degree, there are some differences in the children's age over mother's education (see Figure A.3 in the Appendix). Children who experience a parental separation while they are young are more represented among mothers with no degree. Looking at the average age at divorce over cohorts and over mother's education, having a more highly educated mother seems to be associated with being older at separation, but it is approximately the same across generations (see Figure A.3 in the Appendix). Nevertheless, the differences are much smaller when respondents who declare a parental separation after the age of 15 are excluded.



**Fig. 3.** Distribution of children of divorced families by age group across birth cohorts. Among children born between 1946 and 1950, 17% of those who experience a divorce, experience it before 3 years old, they are around 12% for the generation born between 1981 and 1990

## 2.3 Identification strategy

Let us consider a family where individual's achievement is a function of their characteristics, their parents' characteristics, their parents' separation and the age of the individual when this separation occurs. We observe two siblings per family. As benchmark estimates, I first consider a random effects model, assuming exogenous selection.

$$y_{is} = \beta_0 + \beta_1 X_{is} + \beta_2 X_i^P + \gamma_0 D_i + \sum_{g=1}^{G-1} \gamma_1^g D A_{is}^g + \epsilon_{is} \quad (2.1)$$

where family is denoted  $i$ , each sibling is denoted  $s$  in the family. Outcomes of sibling  $s$  in family  $i$  is denoted  $y_{is}$ . The sibling's characteristics, such as gender, year of birth centred on 1960, and birth order, are denoted  $X_{is}$ . Family characteristics, such as family size, parent's occupation, and parent's

education are denoted  $X_i^P$ , and it is invariant across siblings.  $D_i$  is a dummy that equals 1 if the individual experiences a divorce.  $DA_{is}^g$  is the age group of the child when the parents are divorced.  $\gamma_0$  is the average effect of divorce for the reference age group  $G$  (which has been omitted), ceteris paribus.  $\gamma_1^g$  is the average additional effect of experiencing a divorce in this age group compared to the reference age group  $G$ , ceteris paribus.

This model requires that  $\epsilon_{is}$  is not correlated with family structure.  $\epsilon_{is}$  can be decomposed into two components:  $\epsilon_{is} = u_{is} + \alpha_i$ , where  $\alpha_i$  is the family fixed effect, catching all variables - observed or latent - common among siblings.

In an attempt to relax part of these assumptions, I consider a family fixed-effect model<sup>15</sup>. This is equivalent to a siblings-difference model. First differencing Equation (2.1), we have:

$$\Delta y_{is} = \beta_1 \Delta X_{is} + \sum_{g=1}^{G-1} \gamma_1^g \Delta DA_{is}^g + \Delta \epsilon_{is} \quad (2.2)$$

where  $y_{is}$ ,  $X_{is}$ ,  $DA_{is}^g$  and  $\epsilon_{is}$  refer to the same variables as before.  $\Delta \epsilon_{is} = \Delta u_{is}$ .

$\gamma_1^g$  is the effect, within a family, of experiencing a divorce in age group  $g$ , compared to experiencing it in the reference group  $G$ . For example,  $\gamma_1^{0-3}$  is the effect, within a family, of experiencing a divorce aged between 0 and 3, compared to experiencing it in the reference group  $G$ . If group  $G$  is not affected at all by divorce  $\gamma_1^G = \gamma_0 = 0$ , then  $\gamma_1^g$  captures the average total effect of experiencing a divorce between 0 and 3, controlling for divorced families selection. We will see in next section that this assumption is reasonable.

Divorce is not variant across siblings (Half-siblings are excluded when possible, because they are not a good counter-factual) but the age at divorce is variant between siblings. Therefore, the focus is on siblings who do not experience parental separation in the same age group  $g$ .<sup>16</sup>

Standard errors are clustered at the family level, and bootstrapped using 500 replications in both models.

The siblings-difference method rules out the endogeneity issue due to a family effect common to both siblings. Formally, it will handle with selection due to unobserved characteristics common among siblings ( $\alpha_i$ ). Therefore, the family environment is assumed to be similar between siblings, and this assumption is crucial, the more similar the familial environment is among siblings, the larger

<sup>15</sup>See also Ermisch and Francesconi (2001) [20], Björklund and Sundström (2007) [10], Francesconi et al (2010) [21] or Bratberg et al (2014) [13]

<sup>16</sup>In the Appendix, results concerning an alternative model are reported.  $divage_{is}$  is the child's age when the parents get divorced.

$$\Delta y_{is} = \beta_1 \Delta X_{is} + \gamma_1 \Delta f(divage_{is}) + \Delta \epsilon_{is} \quad (2.3)$$

$\gamma_1$  is the average effect of being one year older at the moment of divorce, within a family.

part of the selection the family fixed effect catches. To be sure that the family environment is similar between siblings, I test the model excluding siblings with an age difference greater than 10 years. Nevertheless, this method is subject to limitations as well. First, it does not take into account that siblings may react differently to any change in the parents situation or behaviour at specific ages. Such examples of a change in the family environment are multiple: the development of an alcohol addiction, a job loss, or conflict. Focusing on conflict, siblings will be confronted to different levels of conflict at specific age. If conflict has a different effect on the child depending on age, it will not be cancelled out by the family-fixed effect model. If there is no clear evidence in the psychological literature that parental conflict impacts more children at a specific age, it is clear that they respond differently. According to Jenkins and Buccioni (2000) [24], younger children are more vulnerable than older children because they are more likely to blame themselves for their parents' conflict, but less vulnerable on other dimensions, since they perceive the conflict as over if angry affect and shouting stops. Children of 9 years of age have been found to be more sensitive to whether conflict has been resolved than 5-year-olds children, and report more distress than 5-year-olds to unresolved conflict <sup>17</sup>. The effect of conflict on educational attainment and labor market outcomes is still unclear, nevertheless, assuming that the two siblings outcomes react equally to a conflict that occurs at different ages is hard to accept. Moreover, siblings can react differently to family environment just because they are different, but this is less a concern, since there are many observations, it can be assumed there is a convergence, and birth order is already controlled for.

Second, this model assumes that idiosyncratic endowment  $u_{is}$  is not correlated with divorce. This assumes that inherent differences between siblings, such as a very different behaviour or a disability, are not correlated with divorce. For further discussion, see Ermisch and Francesconi (2001) [20]. Even if the assumptions of this model are much weaker than the random effects model ones, it must be stressed that any resulting effect has to be interpreted with care, indicating correlation rather than causal relation.

On the other hand, siblings-difference model requires variations in the variable of interest among the siblings. It cannot be used if this variable does not vary, and still, we must have enough observations in each age group. Siblings-difference model cannot be used to study the heterogeneity of the effect of divorce according to gender; it would require to exclude same gender siblings, and to assume that the sex composition of siblings does not impact child's achievement, and this may not be reasonable. We use the random effects and fixed effect models to investigate heterogeneity of parental separation according to mother's degree, or to the cohort of birth.

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<sup>17</sup>Younger children are less able to distinguish between parent and spousal roles, and conceptualized the social roles of mothers and fathers as parental more than spousal. This may account for the greater likelihood that young children blame themselves for conflict. This has generally been attributed to egocentricity in the younger child

## 3 Results

It must be stressed that the causal interpretation of the following results relies on strong assumptions (see previous Section). Any resulting effect has to be interpreted with care, indicating correlations rather than causal relation.

### 3.1 Main results

Table 2 shows the estimated effects of divorce on three outcomes : schooling which is a proxy for the number of years of schooling, earnings-weighted education, and the individual's social position.<sup>18</sup>

Controls for individual characteristics, such as gender, year of birth and its quadratic term, age and its quadratic term and birth order are included, as are family background variables, such as parents degree and profession, parents' country of birth, mother's year of birth, number of siblings, and region of birth are included. Siblings who experience the separation in the same age group are excluded, to avoid identification issues.

For schooling, in the random effects model, without considering age heterogeneity, the estimated effect of divorce is about 0.38 year of schooling less for children who experience a divorce (not reported here). First column of Table 2 shows the results for the random effects model for schooling outcome. Children who experience a parental separation after the age of 18 fare the same as children who grew up with both parents (they are the reference group). This enables us to catch the total effect in siblings-difference model and not just a relative effect to this reference age group.

When divorce occurs before the age of 18, children have about one semester less of schooling than those who experience it after the age of 18. The 16-18 year-olds, and the 7-9 year-olds are less affected among those who experience the separation before the age of 18. The youngest are the most affected, they do nearly one year less of schooling than the reference age group. In column 2 of Table 2, we account for selection of divorced families - all latent characteristics common between siblings -, the estimated effect of parental separation is smaller (in absolute values), but the differences are small, especially for adolescents. It is not significant any more for the 7-9 year-olds and the 0-3 years-olds. In France, for two individuals of the same age who end their schooling between the age of 16 and 22, one year of schooling more leads to a wage 7% to 9% higher. The first years after compulsory school seem to be the most determining for future earnings (see Goux and Maurin (1994) [23]). Looking at the effect on social position in columns 5 and 6 of Table 2, we should recover that one semester less of schooling leads to earn around 3-4% less. However, the estimates are much larger (in absolute values): individuals whose parents separate when they were 4-6 year-olds have a social position

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<sup>18</sup>Estimations of the outcomes are described earlier, in the data section, a more detailed description is given in Appendix A 2.

associated with wages 9% lower than someone who experiences the parental separation after the age of 18. Column 6 of Table 2 shows the estimated effect of parental separation on social position, after controlling for divorced family selection. The results are similar. The greatest impact is on the 4-6 year-olds, which is the age of *CP*, the class when children learn to read and begin their basic education. The 10-12 year-olds are also more affected. This larger estimated effect on social position indicates that other variables than education are at stake. Social position catches the effect on the individual's occupation. We can think to a lower access to father's social network or to effects on non-cognitive skills such as self-confidence or emotional skills that reflects in a lower social position through the choice of occupation or the wage bargaining. Also, individuals could choose degrees associated to lower earnings, therefore earnings-weighted education is considered.

Earnings-weighted education accounts for the quality of schooling, which may differ from the quantity of schooling in the French education system. Each degree is associated with average earnings, earnings-weighted education is the wage value associated with this degree compared to having no degree. It measures the quality of the degree. Here, there is a different consideration of studying in a *Grande Ecole* compared to a Master's Degree at University<sup>19</sup>. Nevertheless, the results are similar to those for schooling. Columns 3 and 4 of Table 2 show the results for this outcome. Those who experience a divorce before the age of 15 have a lower earnings-weighted education: they have degrees associated with a wage 2-3% lower, corresponding to the national average wage loss due to one semester less. We recover the effect of parental separation on the number of years of schooling. We are aware that the analysis of these two latter outcomes relies on the assumption that we do not lose too much information with the use of estimated earnings.

It could be argued that this estimation does not account for all divorced family selection, because the family environment has changed between the two siblings, and thus the latent characteristics, such as conflict, are not invariant across siblings, and are not cancelled. For robustness, the model is tested excluding siblings with a large age difference. Results are in Table 3. For all three outcomes, results are slightly larger (in absolute values) for this sample in the random effects model, but looking at the sibling-difference model, results are very similar to the previous one.

A Durbin-Wu-Hausman test shows that we should use the Fixed effect model; but looking more precisely the results, it is not because of the endogeneity of divorce variables. Differences between the two models are small considering these variables, except for the social position when siblings with age difference higher than 10 are excluded.

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<sup>19</sup>See Figure A.1 in Appendix A 2 to see the differences with the education measured as the number of years of schooling



Parental separation could have a different effect according to some variables. If we use the siblings difference model to analyse the differential effect of parental separation according to gender, this would suppose to restrict the sample to siblings with one man and one woman; and this sample may be not representative. Therefore, we estimate the heterogeneity of the effect of parental separation across gender only with a random effects model. For the other variables of interest, we provide the siblings-difference model results as well.

Table 2 – Effect of a parental separation

	Schooling		Earnings-weighted Education		Social Position	
	Random Effects	Sibling Difference	Random Effects	Sibling Difference	Random Effects	Sibling Difference
0-3 at divorce	−0.91*** (0.13)	−0.45 (0.28)	−0.03*** (0.01)	−0.02 (0.01)	−0.08*** (0.02)	−0.05 (0.04)
4-6 at divorce	−0.88*** (0.11)	−0.54* (0.24)	−0.03*** (0.00)	−0.02* (0.01)	−0.09*** (0.01)	−0.09* (0.04)
7-9 at divorce	−0.60*** (0.10)	−0.32 (0.21)	−0.03*** (0.00)	−0.02+ (0.01)	−0.05*** (0.01)	−0.04 (0.03)
10-12 at divorce	−0.70*** (0.10)	−0.55** (0.19)	−0.02*** (0.00)	−0.01+ (0.01)	−0.06*** (0.01)	−0.08** (0.03)
13-15 at divorce	−0.68*** (0.09)	−0.55** (0.17)	−0.02*** (0.00)	−0.02* (0.01)	−0.05*** (0.01)	−0.05+ (0.03)
16-18 at divorce	−0.34*** (0.09)	−0.32+ (0.17)	−0.01+ (0.00)	−0.01 (0.01)	−0.04** (0.01)	−0.04 (0.02)
Ref. Group : 19+ at divorce	0.10 (0.07)		0.00 (0.00)		0.01 (0.01)	
Constant	39.75*** (2.39)	13.76*** (0.62)	1.55*** (0.10)	0.16*** (0.03)	11.12*** (0.35)	12.64*** (0.10)
Observations	56876	56876	56876	56876	54570	54570

Standard errors in parentheses, clustered at the family level and bootstrapped using 500 replications. +  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

*Note:* Schooling is a proxy for the number of years of schooling. Earnings-weighted education is the wage value of the individual's highest degree (compared to no degree at all). Social position is the average earnings estimated separately for each gender on full-time workers with an Heckman procedure to account for the absence of part-time workers and inactive individuals. See Section A 2 for a more detailed description. Individual characteristics, such as sex, year of birth and its quadratic term, his age and its quadratic term, birth order and a dummy indicating if the individual is the last born of the sibship are all controlled for, as are family background variables, such as parents degree and profession, parents' country of birth, mother's year of birth, family size and its quadratic term, and region of birth.

*Source:* Estimation sample drawn from the Dataset "Formation et Qualification Professionnelle" (INSEE), waves 2003 and 2014. Individuals are born between 1946 and 1988. Siblings who experience a parental separation in the same age group are excluded, to avoid identification issues.

Table 3 – Effect of a parental separation excluding siblings with a high age difference

	Schooling		Earnings-weighted Education		Social Position	
	Random Effects	Sibling Difference	Random Effects	Sibling Difference	Random Effects	Sibling Difference
0-3 at divorce	−1.15*** (0.14)	−0.57+ (0.31)	−0.04*** (0.01)	−0.02 (0.01)	−0.08*** (0.02)	−0.03 (0.04)
4-6 at divorce	−0.97*** (0.12)	−0.56* (0.27)	−0.04*** (0.01)	−0.02+ (0.01)	−0.09*** (0.02)	−0.07+ (0.04)
7-9 at divorce	−0.71*** (0.10)	−0.36 (0.22)	−0.03*** (0.00)	−0.02+ (0.01)	−0.05*** (0.01)	−0.02 (0.03)
10-12 at divorce	−0.79*** (0.10)	−0.58** (0.20)	−0.02*** (0.01)	−0.02 (0.01)	−0.06*** (0.01)	−0.07* (0.03)
13-15 at divorce	−0.74*** (0.10)	−0.56** (0.17)	−0.02*** (0.00)	−0.02* (0.01)	−0.05*** (0.01)	−0.04 (0.03)
16-18 at divorce	−0.43*** (0.10)	−0.35* (0.15)	−0.01* (0.00)	−0.01 (0.01)	−0.04** (0.01)	−0.03 (0.02)
Ref. Group : 19+ at divorce	0.18* (0.08)		0.00 (0.00)		0.01 (0.01)	
Constant	36.76*** (2.64)	14.09*** (0.77)	1.52*** (0.11)	0.19*** (0.03)	10.31*** (0.42)	12.76*** (0.14)
Observations	52602	52602	52602	52602	50516	50516

Standard errors in parentheses, clustered at the family level and bootstrapped using 500 replications. +  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

*Note:* Schooling is a proxy for the number of years of schooling. Earnings-weighted education is the wage value of the individual's highest degree (compared to no degree at all). Social position is the average earnings estimated separately for each gender on full-time workers with an Heckman procedure to account for the absence of part-time workers and inactive individuals. See Section A 2 for a more detailed description. Individual characteristics, such as sex, year of birth and its quadratic term, his age and its quadratic term, birth order and a dummy indicating if the individual is the last born of the sibship are all controlled for, as are family background variables, such as parents degree and profession, parents' country of birth, mother's year of birth, family size and its quadratic term, and region of birth.

*Source:* Estimation sample drawn from the Dataset "Formation et Qualification Professionnelle" (INSEE), waves 2003 and 2014. Individuals are born between 1946 and 1988. Siblings who experience a parental separation in the same age group or with an age difference larger than ten years are excluded.

### 3.2 Heterogeneity of the effect of divorce

In this section, I mainly use the Random Effect Model. Since many of these characteristics are chosen by the family and might be endogeneous, the following estimated effects have to be interpreted with care, indicating correlations rather than causal relation.

**Gender heterogeneity.** Table 4 shows the effect of parental separation on labour market outcome according to gender. The results suggest that boys' education suffer more from a parental separation than do girls. This is the case until the age of 12, but only significant for 7-12 years-old (see Table A.16<sup>20</sup> in the Appendix). Girls' social position is more affected by parental separation than boys' one, but the difference is not statistically significant. These findings contrast with Brenøe and Lundberg (2016) [14] and Lundberg (2017) [28] who find no gender difference in the effect of family structure on adult outcomes.

Table 4 – Heterogeneous divorce effect according to gender

	Schooling	Earnings-weighted Education	Social Position
Divorced	−0.38*** (0.04)	−0.02*** (0.00)	−0.04*** (0.01)
DivorcedXMale=1	−0.18** (0.06)	−0.01*** (0.00)	0.01 (0.01)
Constant	34.62*** (2.71)	1.45*** (0.11)	10.18*** (0.41)
Observations	52602	52602	50516

Standard errors in parentheses, clustered at the family level and bootstrapped using 500 replications. +  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

*Note:* Random effects results. Schooling is a proxy for the number of years of schooling. Earnings-weighted education is the wage value of the individual's highest degree (compared to no degree at all). Social position is the average earnings estimated separately for each gender on full-time workers with an Heckman procedure to account for the absence of part-time workers and inactive individuals. See Section A 2 for a more detailed description. Individual characteristics, such as sex, year of birth and its quadratic term, his age and its quadratic term, birth order and a dummy indicating if the individual is the last born of the sibship are all controlled for, as are family background variables, such as parents degree and profession, parents' country of birth, mother's year of birth, family size and its quadratic term, and region of birth.

*Source:* Estimation sample drawn from the Dataset "Formation et Qualification Professionnelle" (INSEE), waves 2003 and 2014. Individuals are born between 1946 and 1988. Siblings who experience a parental separation in the same age group or with an age difference larger than ten years are excluded.

<sup>20</sup>We must note that the third column is not exactly the difference between the 2 first columns, in the 2 first columns, the models are estimated for girls and boys separately, thus coefficients of the control variables are also allowed to vary across gender, but results are consistent.

## Heterogeneity according to family background:

Table 5 – Heterogeneous divorce effect according to mother’s degree

	Schooling	Earnings-weighted Education	Social Position
Divorced	−0.58*** (0.03)	−0.02*** (0.00)	−0.06*** (0.00)
DivorcedXLess=1	0.40*** (0.05)	0.02*** (0.00)	0.06*** (0.01)
Constant	35.35*** (2.53)	1.50*** (0.11)	10.34*** (0.44)
Observations	52602	52602	50516

Standard errors in parentheses, clustered at the family level and bootstrapped using 500 replications. +  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

*Note:* Random effects results. Schooling is a proxy for the number of years of schooling. Earnings-weighted education is the wage value of the individual’s highest degree (compared to no degree at all). Social position is the average earnings estimated separately for each gender on full-time workers with an Heckman procedure to account for the absence of part-time workers and inactive individuals. See Section A 2 for a more detailed description. Individual characteristics, such as sex, year of birth and its quadratic term, his age and its quadratic term, birth order and a dummy indicating if the individual is the last born of the sibship are all controlled for, as are family background variables, such as parents degree and profession, parents’ country of birth, mother’s year of birth, family size and its quadratic term, and region of birth.

*Source:* Estimation sample drawn from the Dataset "Formation et Qualification Professionnelle" (INSEE), waves 2003 and 2014. Individuals are born between 1946 and 1988. Siblings who experience a parental separation in the same age group or with an age difference larger than ten years are excluded.

Table 5 shows the heterogeneity of the estimated effect of a parental separation according to mother’s education. Looking at random effects results, a divorce is more harmful if the mother is more highly educated, this is the case for the three outcomes. We consider more educated mothers as mothers who have a degree (vs those who do not have any degree). This effect is true for all ages at separation in the random effects model (see Table A.17 in the Appendix).

When the family fixed effect is controlled for, results are different. Individuals whose mother is less highly educated are more affected by their parents’ separation (see Table A.18 in the Appendix). These mothers might be more vulnerable, since a lower education level might be associated with a lower income. Because of homogamy, the father is likely to be poorer, therefore, it is also possible that these mothers have a lower alimony, or face more often defaults of payment <sup>21</sup>.

<sup>21</sup>In France, alimony is not systematic and depends on father’s income. If the father is considered too poor, he does not have to give alimony for his child, but the State gives 100 euros a month for a child. In other cases, the alimony is in average 140 euros a month for a child. The Yellow Jacket movement has highlighted the economic difficulties of single mothers in France, facing their ex-husband’s default of payment.

However, among individuals whose mothers are less highly educated, those who experience a parental separation are positively selected. If they experience it after the age of 18, and are therefore not very affected by the parental separation per se, they do on average one semester more of schooling and have a social position associated on average with a wage 8% larger (see Table A.17). This explains why the effect of parental separation is lower for this subsample in the random effects model.

Moreover, having a mother with no degree could mean a lower potential loss from a separation; the children of non-divorced families where the mother has a lower level of education experience shorter schooling, lower social position, and so divorce has a lower impact because their level of schooling/earnings is already low ; whereas where the mother is more highly educated, there is place for more inequalities. This might also explain why in the random effects model, the effect of parental separation seems larger in this group.

### **No clear stigmatisation effect**

In 1975, no fault divorce law is adopted in France, which could reflect a change in the public perception of divorce. Here, being born in 1970 is taken as the threshold, rather than the date of separation, even if those born between 1970 and 1975 experience a divorce before or after the change in the law. The reform is considered more as a variable that reflects the social perception of divorce and the increasing demand for divorce, which, clearly, had changed before 1975. Even more, it allows for the same number of observations of children who experience a separation in both sub-samples, and it makes it easier to have a comparison group in the non-divorced families (in which there is no date of separation).

Table 6 shows the estimated effect of parental separation on labour market outcomes for generations born before and after 1970. The results are not clear-cut, the estimated effect of parental separation is not different according to the share of parental separations. Unless, looking at education, we note that it is more harmful for 10-15 year-olds if the share of children whose parents are separated is low, this could reflect a stigmatisation effect, but it is less harmful for other age groups.

The results are not clear-cut either estimating a fixed-effects model (see Table A.19).

Table 6 – Heterogeneous divorce effect according to year of birth : born before or after 1970.

	Schooling			Earnings-weighted Education			Social Position		
	Born before 1970	Born after 1970		Born before 1970	Born after 1970		Born before 1970	Born after 1970	
0-3 at divorce	−0.90*** (0.18)	−1.04*** (0.11)		−0.04*** (0.01)	−0.04*** (0.01)		−0.04* (0.02)	−0.09*** (0.02)	
0-3 at divorce=1XAfter 1970=1			−0.13 (0.22)			−0.01 (0.01)			−0.05+ (0.03)
4-6 at divorce	−0.84*** (0.12)	−0.71*** (0.08)		−0.03*** (0.00)	−0.03*** (0.00)		−0.08*** (0.02)	−0.07*** (0.01)	
4-6 at divorce=1XAfter 1970=1			0.04 (0.17)			−0.01 (0.01)			−0.00 (0.02)
7-9 at divorce	−0.41*** (0.09)	−0.60*** (0.08)		−0.02*** (0.00)	−0.03*** (0.00)		−0.04** (0.01)	−0.03** (0.01)	
7-9 at divorce=1XAfter 1970=1			−0.23+ (0.13)			−0.02** (0.01)			0.00 (0.02)
10-12 at divorce	−0.69*** (0.08)	−0.52*** (0.07)		−0.02*** (0.00)	−0.02*** (0.00)		−0.05*** (0.01)	−0.05*** (0.01)	
10-12 at divorce=1XAfter 1970=1			0.15 (0.12)			−0.00 (0.01)			−0.01 (0.02)
13-15 at divorce	−0.71*** (0.08)	−0.46*** (0.08)		−0.02*** (0.00)	−0.02*** (0.00)		−0.02* (0.01)	−0.06*** (0.01)	
13-15 at divorce=1XAfter 1970=1			0.23+ (0.12)			0.00 (0.01)			−0.05** (0.02)
16-18 at divorce	−0.21* (0.09)	−0.35*** (0.08)		−0.00 (0.00)	−0.02*** (0.00)		−0.02* (0.01)	−0.04*** (0.01)	
16-18 at divorce=1XAfter 1970=1			−0.16 (0.14)			−0.01+ (0.01)			−0.03+ (0.02)
19 and more at divorce	0.24* (0.10)	0.07 (0.10)		0.01 (0.00)	0.00 (0.01)		0.03+ (0.02)	−0.02 (0.01)	
19 and more at divorce=1XAfter 1970=1			−0.26 (0.16)			−0.01 (0.01)			−0.05* (0.02)
Constant	37.74*** (2.99)	55.66*** (3.45)	38.79*** (2.54)	1.19*** (0.12)	2.99*** (0.17)	1.58*** (0.11)	10.48*** (0.46)	12.17*** (0.50)	10.42*** (0.40)
Observations	36150	16452	52602	36150	16452	52602	34813	15703	50516

Standard errors in parentheses, clustered at the family level and bootstrapped using 500 replications. +  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

*Note:* Random effects results. See previous tables for a description of the outcomes and the controls.

*Source:* Estimation sample drawn from the Dataset "Formation et Qualification Professionnelle" (INSEE), waves 2003 and 2014. Individuals are born between 1946 and 1988.

Siblings who experience a parental separation in the same age group or with an age difference larger than ten years are excluded.

**Gender sibling heterogeneity (results not reported):** The estimated effect of divorce according to the gender composition of the siblings sister/sister, brother/brother, sister/brother is not significant, although there is no information on the sex of other siblings.

**Age difference (results not reported):** In random effects models, there is no significant effect of the age difference between siblings on the effect of divorce, although there is no information on the year of birth of other siblings.

## 4 Sensitivity checks

### 4.1 Sample selection

Some sample restriction is needed when using the sibling-difference model. In this section, the possible effect of these restrictions on the results are investigated.

**Excluding only children.** The siblings-difference method necessarily excludes only-children from the analysis. This might be a concern, according to Caya and Liem (1998) [16], individuals from high-conflict homes with high sibling support report more positive adjustment than do only-children and individuals with low sibling support. Sibling support has also a buffering effect. To test if the exclusion of only children might affect the results, the initial sample from the survey Formation et Qualification Professionnelle (INSEE, 2003 and 2014 waves), of individuals born between 1946 and 1989 is used, their siblings are excluded here.

Table 7 shows the effect of parental separation on labour market outcomes for only children compared to children with siblings. Children with no sibling do shorter schooling and have lower social position, but the estimated effect of divorce is not significantly different for only children than for children with siblings. Thus excluding only children does not seem to affect the results on the estimation of divorce effect.

**Excluding siblings who experience a divorce in the same age group.** To be able to estimate the siblings-difference model, siblings in the same age group must be excluded. The random effects excluding, or not, siblings who are in the same age group are shown in Table 8. Columns 1, 3 and 5 show the results for the whole sample, and columns 2, 4 and 6 show the results excluding siblings who experience a divorce in the same age group. Results are similar except for schooling for those who are older than 19 at the moment of the separation, which is the reference group. It is possible that the effect of divorce is somewhat under-estimated for the sample excluding siblings who experience



Table 7 – Sensitivity to the sample restriction: Exclusion of only children

	Schooling	Earnings-weighted Education	Social Position
Divorce	−0.39*** (0.05)	−0.02*** (0.00)	−0.04*** (0.01)
Only child	−0.29*** (0.06)	−0.01*** (0.00)	−0.03*** (0.01)
Only child X divorce	0.18 (0.13)	0.01 (0.01)	0.01 (0.02)
Constant	61.24*** (5.60)	2.15*** (0.21)	13.25*** (0.79)
Observations	34421	34421	33906

Standard errors in parentheses, bootstrapped using 500 replications. +  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

*Note:* Random effects results. Schooling is a proxy for the number of years of schooling. Earnings-weighted education is the wage value of the individual's highest degree (compared to no degree at all). Social position is the average earnings estimated separately for each gender on full-time workers with an Heckman procedure to account for the absence of part-time workers and inactive individuals. See Section A 2 for a more detailed description. Individual characteristics, such as sex, year of birth and its quadratic term, his age and its quadratic term, birth order and a dummy indicating if the individual is the last born of the sibship are all controlled for, as are family background variables, such as parents degree and profession, parents' country of birth, mother's year of birth, family size and its quadratic term, and region of birth.

*Source:* All respondents from the Dataset "Formation et Qualification Professionnelle" (INSEE), waves 2003 and 2014, born between 1946 and 1988.

the separation is the same age group, but this is very small.

Table 8 – Sensitivity to the sample restriction: Exclusion of the siblings of the same age group

	Schooling		Earnings-weighted Education		Social Position	
0-3 at divorce	−0.73*** (0.08)	−0.81*** (0.11)	−0.03*** (0.00)	−0.03*** (0.00)	−0.06*** (0.01)	−0.07*** (0.01)
4-6 at divorce	−0.78*** (0.07)	−0.78*** (0.08)	−0.03*** (0.00)	−0.03*** (0.00)	−0.07*** (0.01)	−0.07*** (0.01)
7-9 at divorce	−0.48*** (0.06)	−0.50*** (0.07)	−0.02*** (0.00)	−0.03*** (0.00)	−0.04*** (0.01)	−0.04*** (0.01)
10-12 at divorce	−0.59*** (0.06)	−0.60*** (0.06)	−0.02*** (0.00)	−0.02*** (0.00)	−0.06*** (0.01)	−0.05*** (0.01)
13-15 at divorce	−0.54*** (0.05)	−0.59*** (0.05)	−0.02*** (0.00)	−0.02*** (0.00)	−0.04*** (0.01)	−0.04*** (0.01)
16-18 at divorce	−0.23*** (0.07)	−0.25*** (0.07)	−0.01** (0.00)	−0.01** (0.00)	−0.02** (0.01)	−0.03** (0.01)
19 and more at divorce	0.23*** (0.06)	0.10 (0.07)	0.01*** (0.00)	0.00 (0.00)	0.03*** (0.01)	0.01 (0.01)
Constant	39.93*** (2.46)	39.75*** (2.36)	1.56*** (0.11)	1.55*** (0.11)	11.10*** (0.36)	11.12*** (0.37)
Observations	57932	56876	57932	56876	55572	54570

Standard errors in parentheses, clustered at the family level and bootstrapped using 500 replications. +  $p < 0.1$ ,

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

*Note:* Random effects results. Schooling is a proxy for the number of years of schooling. Earnings-weighted education is the wage value of the individual's highest degree (compared to no degree at all). Social position is the average earnings estimated separately for each gender on full-time workers with an Heckman procedure to account for the absence of part-time workers and inactive individuals. See Section A 2 for a more detailed description. Individual characteristics, such as sex, year of birth and its quadratic term, his age and its quadratic term, birth order and a dummy indicating if the individual is the last born of the sibship are all controlled for, as are family background variables, such as parents degree and profession, parents' country of birth, mother's year of birth, family size and its quadratic term, and region of birth.

*Source:* Formation et Qualification Professionnelle (INSEE), 2003 and 2014 waves, using individuals who report information on a sibling, and born between 1946 and 1988 in columns 1, 3 and 5; and excluding siblings who experience a divorce in the same age group in columns 2, 4 and 6.

## 4.2 Controlling for question bias

The question asks about a parental separation *during schooling*, which means that after age 16 (the age of compulsory school in France), those who declare a parental separation are still at school. This could bias the divorced families sample where more educated individuals are concerned. For example, if the individual is 25 years old when the parents are separated, it is declared only if the subject is still at school, then the longer is the schooling, the greater is the probability that the separation is declared. To investigate this potential bias, the results are compared in two different sub-samples, one including families where the respondents declare a divorce after 16 years old, and the other excluding them. All the respondents' siblings who experience a parental separation after age 16 remain in the sample.

In both Tables 9 and 10, columns 1, 3 and 5 show the results when siblings with an age difference higher than 10 years are excluded from the sample, and columns 2, 4 and 6 show the results when all the respondents and their siblings who declare a divorce after 16 years old are also excluded from the sample.

### Random effects results (Table 9)

Considering differences between the two sub-samples for those who experience a parental separation after the age of 19 and the 16-18 year-olds, the estimated effect of parental separation is more negative (0.2 year of schooling) for those who experience a parental separation after the age of 19 in the second sub-sample, suggesting a small question bias for the number of years of schooling. The differences are negligible, and it does not impact the other age groups. Moreover the effect of experiencing a parental separation after the age of 19 is non statistically insignificant for all outcomes. The only thing that may change is the benchmark from the one the effect of divorce is estimated, but this change is very tiny.

### Siblings-difference results (Table 10)

The siblings-difference model cannot consider all the age groups because the reference age group of 18 and over is too small, which introduces some collinearity between the age groups. Then, only five age groups are considered and the reference age group is those who experience a parental separation after the age of 16. Since this reference group is more affected by parental separation than those over the age of 18, differences compared to this reference group are smaller. Some significance is lost because a loss of observations decreases the statistical power of the estimation.

Comparing the two sub-samples, results are similar regarding the three outcomes. Therefore, question bias could be rejected.

Table 9 – Question bias. Random effects results.

	Schooling		Earnings-weighted Education		Social Position	
0-3 at divorce	−0.97*** (0.12)	−0.97*** (0.11)	−0.04*** (0.00)	−0.04*** (0.00)	−0.06*** (0.01)	−0.06*** (0.01)
4-6 at divorce	−0.79*** (0.08)	−0.79*** (0.08)	−0.03*** (0.00)	−0.03*** (0.00)	−0.08*** (0.01)	−0.08*** (0.01)
7-9 at divorce	−0.53*** (0.06)	−0.56*** (0.06)	−0.03*** (0.00)	−0.03*** (0.00)	−0.04*** (0.01)	−0.04*** (0.01)
10-12 at divorce	−0.61*** (0.06)	−0.59*** (0.06)	−0.02*** (0.00)	−0.02*** (0.00)	−0.05*** (0.01)	−0.05*** (0.01)
13-15 at divorce	−0.56*** (0.05)	−0.56*** (0.06)	−0.02*** (0.00)	−0.02*** (0.00)	−0.04*** (0.01)	−0.04*** (0.01)
16-18 at divorce	−0.25*** (0.07)	−0.24* (0.10)	−0.01** (0.00)	−0.01 (0.00)	−0.03*** (0.01)	−0.03* (0.01)
19 and more at divorce	0.18* (0.08)	−0.04 (0.14)	0.00 (0.00)	−0.00 (0.01)	0.01 (0.01)	−0.02 (0.02)
Constant	36.76*** (2.66)	36.55*** (2.75)	1.52*** (0.12)	1.51*** (0.11)	10.31*** (0.43)	10.35*** (0.41)
Observations	52602	51946	52602	51946	50516	49889

Standard errors in parentheses, clustered at the family level and bootstrapped using 500 replications. +  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

*Note:* Random effects results. Schooling is a proxy for the number of years of schooling. Earnings-weighted education is the wage value of the individual's highest degree (compared to no degree at all). Social position is the average earnings estimated separately for each gender on full-time workers with an Heckman procedure to account for the absence of part-time workers and inactive individuals. See Section A 2 for a more detailed description. Individual characteristics, such as sex, year of birth and its quadratic term, his age and its quadratic term, birth order and a dummy indicating if the individual is the last born of the sibship are all controlled for, as are family background variables, such as parents degree and profession, parents' country of birth, mother's year of birth, family size and its quadratic term, and region of birth.

*Source:* Estimation samples drawn from the Dataset "Formation et Qualification Professionnelle" (INSEE), waves 2003 and 2014. Columns 1, 3 and 5 show the results when siblings with an age difference larger than 10 years are excluded from the sample, and columns 2, 4 and 6 show the results when all the families of respondents who declare a divorce after age 16 are also excluded from the sample.

Table 10 – Question bias. Fixed effects results.

	Schooling		Earnings-weighted Education		Social Position	
0-3 at divorce	−0.30 (0.26)	−0.29 (0.30)	−0.01 (0.01)	−0.02 (0.01)	−0.01 (0.04)	−0.01 (0.05)
4-6 at divorce	−0.29 (0.23)	−0.27 (0.26)	−0.01 (0.01)	−0.02+ (0.01)	−0.05 (0.03)	−0.05 (0.04)
7-9 at divorce	−0.09 (0.20)	−0.10 (0.21)	−0.01 (0.01)	−0.02 (0.01)	0.00 (0.03)	−0.00 (0.03)
10-12 at divorce	−0.32+ (0.19)	−0.26 (0.18)	−0.01 (0.01)	−0.01 (0.01)	−0.04+ (0.02)	−0.04 (0.03)
13-15 at divorce	−0.31* (0.15)	−0.24 (0.16)	−0.01+ (0.01)	−0.01+ (0.01)	−0.02 (0.02)	−0.02 (0.03)
Constant	14.08*** (0.82)	13.96*** (0.79)	0.19*** (0.04)	0.18*** (0.04)	12.76*** (0.13)	12.74*** (0.15)
Observations	52602	51946	52602	51946	50516	49889

Standard errors in parentheses, clustered at the family level and bootstrapped using 500 replications. +  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

*Note:* Random effects results. Schooling is a proxy for the number of years of schooling. Earnings-weighted education is the wage value of the individual's highest degree (compared to no degree at all). Social position is the average earnings estimated separately for each gender on full-time workers with an Heckman procedure to account for the absence of part-time workers and inactive individuals. See Section A 2 for a more detailed description. Individual characteristics, such as sex, year of birth and its quadratic term, his age and its quadratic term, birth order and a dummy indicating if the individual is the last born of the sibship are all controlled for.

*Source:* Estimation samples drawn from the Dataset "Formation et Qualification Professionnelle" (IN-SEE), waves 2003 and 2014. Columns 1, 3 and 5 show the results when siblings with an age difference larger than 10 years are excluded from the sample, and columns 2, 4 and 6 show the results when all the families of respondents who declare a divorce after age 16 are also excluded from the sample.

## 5 Concluding discussion

This paper examines the extent of the effect of parental separation on three specific outcomes: number of years of schooling, earnings-weighted education, which accounts for the quality of the studies, and the social position. The aim is to take into account divorced family selection, using a sibling approach. The negative effect of parental separation depends on the age of the individual. Until the age of 16, those who experience a parental separation have one semester less of schooling than those who do not, and the analysis of earnings-weighted education reveals that they also experience a lower quality education. This second effect is significant but not as high. Where social position is concerned, these individuals have a social position associated with a wage 4% lower than those who do not experience a parental separation, and this effect rises to 9% for the 4-6 year-olds. Taking into account the divorced family selection, results do not change significantly.

These findings are difficult to compare to the other studies, since the outcomes vary. Björklund and Sundström (2006) [12] find no significant effect of parental separation on "earnings-weighted education" when divorced family selection is taken into account. It is not so surprising that the parental separation impact is greater in France than in Sweden, since inequality of opportunity is lower in the latter country. Francesconi et al. (2010) [21], in Germany, Ermisch and Francesconi (2001) [20], in Great Britain also find negative effects of parental separation on the probability of achieving a minimum degree (A-level or equivalent), and these authors find smaller effects but still statistically significant results when selection is accounted for. Surprisingly, in France, the estimated effect of parental separation is the same when selection is taken into account, which may be due to the larger sample used for this study, that enables the retention of statistical power in the sibling-difference model. This could also signify that divorce is more wide-spread, in all social categories, in France, which makes any latent characteristics appear to be random. Therefore, there is poor evidence of a selection of divorced family in France.

If this negative correlation results from a causal relation, several mechanisms could be at stake.

On the first hand, the parental separation may impact the available parents resources. First, economic resources might decrease after the parental separation. This channel is relevant whatever the child's age at the moment of the parental separation. In France, fiscal policies already aim to help separated single parent families <sup>22</sup>, but it seems to be insufficient. Alimony is not systematic and covers only partially children's needs, since it depends on father's income. If the father is considered too poor, he does not have to give alimony for his child, but the State gives 100 euros a month for a child. In other cases, the alimony is in average 140 euros a month for a child. The Yellow Jacket movement has highlighted the economic difficulties of single mothers in France, facing their

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<sup>22</sup>There is a higher fiscal advantage to be widowed than separated

ex-husband's default of payment. This might be at stake especially for mothers who are less highly educated. Indeed, individuals' achievement is lower than their older sibling, especially for individuals whose mother is less highly educated.

The second parental resource at stake is time, and this channel may not be independent from the first one. To compensate the decrease in income, the custodial parent might increase their working hours. Consequently, time spent with at least one parent might decrease. Several studies (Del Bono 2016 [19], Del Boca (2017) [18]) highlight the importance of time spent with the mother in early childhood. Therefore, this channel might be particularly at stake for young children. In this case, labour market policies going in the sense of a decrease in working hours or more flexible schedule might participate to decrease the causal effect of parental separation<sup>23</sup>. Moreover, breakdown of parental time is likely to be affected, children would spend less time with their two parents and with the non custodial parent, this may also affect the child's development (see Le Forner 2019 [25]).

A third parental resource at stake is the non-custodial parent's social network. Indeed, I find that individuals whose parents are separated do less education or earn less than those whose parents are still together, especially if the mother or the father is more highly educated. This could reflect a greater loss of social network for individuals whose parents are more highly educated. Moreover, this channel may explain the large impact of parental separation on social position, given the low impact on education. Promoting alternating custody might be a solution for this channel.

On the second hand, the parental separation may impact individual's achievement through psychological channel. First, if parental separation was not expected, children would blame themselves for their parental separation (see Booth and Amato (2001) [1]), this would be particularly at stake for younger children (see Jenkins and Boccioni (2000) [24]).

Second, children might be stigmatized by their parents' separation; but this does not seem to be the case since I do not find any differential effect according the individual's cohorts (born before/after 1970).

Finally, the large impact on social position, given the low impact on education, there must be other determinants of social position at play here, we could think about the occupation, largely determined by the individual's non-cognitive skills such as self-confidence, behavioural skills or social skills. This channel might differ across genders. Policy implications for the psychological channel are limited.

Future research should be devoted to investigate the different channels at stake.

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<sup>23</sup>Those policies might have adverse effects, since it may negatively impact the mother's future labour market outcomes and exacerbate gender discriminations on the labour market.

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# Appendix

## A 1 Number of observations

Table A.1 – Number of observations depending on the sample

	(1)	(2)	(3)	(4)	(5)
Not divorced	54498	53608	53608	49534	49534
Divorced	4405	4324	3268	3068	2412
Total	58903	57932	56876	52602	51946
Only_Child	Included	Excluded	Excluded	Excluded	Excluded
Same_age_group	Included	Included	Excluded	Excluded	Excluded
High_age_difference	Included	Included	Included	Excluded	Excluded
Question_bias					Treated

Table A.2 – Number of observations by age group at divorce depending on the sample

	(1)	(2)	(3)	(4)	(5)
0-3	351	343	197	169	169
4-6	430	420	346	327	327
7-9	594	578	476	456	445
10-12	697	686	592	572	524
13-15	825	813	663	636	548
16-18	686	673	569	543	258
18 et plus	822	811	425	365	141
Total	4405	4324	3268	3068	2412
Only_Child	Included	Excluded	Excluded	Excluded	Excluded
Same_age_group	Included	Included	Excluded	Excluded	Excluded
High_age_difference	Included	Included	Included	Excluded	Excluded
Question_bias					Treated

## A 2 Estimation of the Outcomes

### A 2.1 Number of years of schooling

- i) Compute the number of years of schooling on the respondents sample after the primary school "CP"

$$Y_1 = \text{year of end of schooling} - \text{year of birth} - 6$$

- ii) Regress  $Y_1$  on the highest degree, gender, year of birth, its quadratic term, age and its quadratic term and interaction terms. It is then predicted for individuals and their siblings. Results of this regression are presented in Table A.3.

$$Y_1 = X\beta + \epsilon \quad (\text{A.1})$$

$$\Rightarrow \hat{Y}_1 = X\hat{\beta}$$

- iii) To avoid an over-estimation of educational attainment for individuals who repeat many classes or temporarily suspend their education, the median years of schooling is associated with each degree by cohort. Table A.4 reports the values of the number of years of schooling for each cohort and each degree in the fifth first columns.

$$Y_2^{\text{degree} \times \text{cohort}} = \text{median}(Y_1^{\text{degree} \times \text{cohort}})$$

Table A.3 – Estimations of the Number of Years of Schooling

	Number of years of Schooling
Year of birth squarred	-0.002*** (0.000)
Grande Ecole	-0.090 (0.103)
1st cycle at University	-1.994*** (0.105)
BTS, DUT	-2.490*** (0.066)
Paramedical or Social degree	-1.543***

*Continued on next page*

Table A.3 – *Continued from previous page*

	Number of Years of Schooling
	(0.077)
Baccalaureat (general)	-4.214*** (0.063)
Baccalaureat or Brevet (vocational track)	-4.381*** (0.062)
Brevet de Technicien, Professionnel	-3.348*** (0.119)
CAP, BEP	-5.766*** (0.048)
Brevet des collèges	-6.767*** (0.059)
CEP	-8.427*** (0.073)
No degree	-8.319*** (0.056)
Man=1	0.483*** (0.055)
Grande Ecole $\times$ Man=1	-0.214+ (0.114)
1st cycle at University $\times$ Man=1	0.296+ (0.154)
BTS, DUT $\times$ Man=1	-0.257** (0.081)
Paramedical or Social degree $\times$ Man=1	0.406* (0.163)

*Continued on next page*

Table A.3 – *Continued from previous page*

	Number of Years of Schooling
Baccalaureat (general) $\times$ Man=1	-0.182* (0.091)
Baccalaureat or Brevet (vocational track) $\times$ Man=1	-0.147+ (0.080)
Brevet de Technicien, Professionnel $\times$ Man=1	-0.507*** (0.152)
CAP, BEP $\times$ Man=1	-0.598*** (0.064)
Brevet des collèges $\times$ Man=1	-0.372*** (0.083)
CEP $\times$ Man=1	-0.409*** (0.093)
No degree $\times$ Man=1	-0.225** (0.076)
Year of Birth	0.018*** (0.003)
Grande Ecole $\times$ Year of Birth	0.017** (0.005)
1st cycle at University $\times$ Year of Birth	0.042*** (0.008)
BTS, DUT $\times$ Year of Birth	0.023*** (0.004)
Paramedical or Social degree $\times$ Year of Birth	0.054*** (0.006)
Baccalaureat (general) $\times$ Year of Birth	0.013**

*Continued on next page*

Table A.3 – *Continued from previous page*

	Number of Years of Schooling
	(0.004)
Baccalaureat or Brevet (vocational track) $\times$ Year of Birth	0.041*** (0.004)
Brevet de Technicien, Professionnel $\times$ Year of Birth	0.054*** (0.007)
CAP, BEP $\times$ Year of Birth	0.055*** (0.003)
Brevet des collèges $\times$ Year of Birth	-0.002 (0.004)
CEP $\times$ Year of Birth	0.055*** (0.007)
No degree $\times$ Year of Birth	0.090*** (0.004)
Age	-0.065*** (0.010)
Age squared	0.001*** (0.000)
Constant	19.355*** (0.237)
Observations	43822

Standard errors in parentheses. +  $p < 0.1$ , \* $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

*Source:* All respondents from the Dataset "Formation et Qualification Professionnelle" (INSEE), waves 2003 and 2014, born between 1946 and 1988.

Looking at our measure in Table A.4, we can see that the median number of years of schooling for each degree has increased across cohorts, especially for the lowest degrees (no degree, and CEP). Indeed, since 1959, school is compulsory until the age of 16, all the individuals from the sample were

younger than 16 at the moment of the reform, but from the estimations, it appears that the oldest cohorts who are less highly educated have left school before the age of 16. Some of them may stop their schooling before the reform, and therefore before the age of 16. Thus, the oldest cohorts could end school before the age of 16, whereas the most recent cohorts have at least 10 years of schooling.

Table A.4 – The Number of Years of Schooling Measure

Cohort	1946 - 1950	1951 - 1960	1961 - 1969	1970 - 1980	1981 - 1989	"Normal Age"
No Degree	6.06	7.33	8.79	9.91	10.58	?
CEP	6.18	7.02	8.31	9.26	9.76	5
Brevet des Collèges	8.62	9.19	9.87	10.15	9.89	9
CAP, BEP	8.82	9.77	10.99	11.78	12.22	11
Brevet de Technicien, Professionnel	11.02	11.96	13.07	14.11	14.74	12
Baccalaureat or Brevet (vocational Track)	10.68	11.52	12.56	13.27	13.50	12
Baccalaureat (general)	11.13	11.71	12.51	13.00	12.85	12
Paramedical or Social degree	13.34	14.10	15.34	16.26	16.54	14
BTS, DUT	12.75	13.42	14.31	14.81	14.88	14
1st cycle of University	13.12	13.67	14.94	15.76	15.87	14
Grande Ecole	15.21	15.83	16.75	17.12	17.18	17
Bachelor or Master	15.49	16.03	16.82	17.06	16.90	15 - 20

Number of years of schooling for each degree and each cohort.

As a comparison, the number of years of schooling considered as the "normal age" (minus 6) is reported in the last column of Table A.4, it is the same across the cohorts. The "CEP" is a degree delivered at the end of the primary school, between 11 and 13 years old. The "Brevet des Collèges" is delivered at the age of 15. "CAP" and "BEP" are delivered two years after the end of the Junior High School, at 17 for the normal age. "Brevet de Technicien", "Brevet Professionnel", "Baccalaureat" are delivered three years after the end of the High School, at the age of 18. "BTS", "DUT" and 1st cycle of University are taken 2 years after the Baccalaureat. The *Grandes Ecoles* deliver a Master, 5 years after the Baccalaureat. The "normal age" measure has several issues. First, it is difficult to define a normal age for some degrees. What is the normal age to have no degree? Moreover, some variables gather several degrees in the same category: Bachelor or more for example groups some degrees where the normal number of years of schooling is between 15 (Bachelor) and 20 (PhD). "Paramedical or Social degree" gathers different kinds of degrees, and it could be done with or without passing the Baccalaureat, we take the normal age as 2 years after the Baccalaureat.<sup>24</sup> Second, it is the same across cohorts, whereas the actual number of years at school has increased, and this reflects an increase in education across cohorts. As mentioned earlier, the oldest cohorts could end school before the age of 16, whereas the most recent cohorts have at least 10 years of schooling. Besides, taking the normal age to have the highest degree leads to omit all the years of schooling after this degree. For example, the normal number of years of schooling to have a CEP is 5 years, but the actual number of years of schooling taken by these individuals is much higher, and this reflects their

<sup>24</sup>This variable is the most detailed we can have, since we do not have more detailed information for the respondent's sibling.



education.

Our measure is not perfect either. As we can see in Table A.4, the number of years of schooling for having no degree is higher than for having a "CEP"<sup>25</sup>. Staying at school may reflect both doing a better degree *or* a higher probability to repeat classes, this is not perfectly handled by taking the median.

Moreover, for the same number of years of schooling in France, it is possible to obtain degrees of diverse quality or that are differently valued in the society. In an attempt to take into account the quality of the degree, we look at another measure of schooling: the earnings-weighted education.

## A 2.2 Earnings-weighted education.

Following Ben-Halima et al. (2014) [8] and Björklund and Sundström (2006) [12], the Earnings-weighted education is examined for each degree.

- i) We predict the log of earnings for each gender. On the respondents sample, the log of earnings is regressed on the highest degree, year of birth, its quadratic term, age and its quadratic term, dummies for the profession categories (31 categories) and interaction terms (see Björklund and Jäntti, 1997 [11] for example). The estimation is carried out for full-time workers, using the Heckman procedure to account for the exclusion of part-time workers and the inactive. The selection equation takes into account the marital status and the number of children.

$$Y_1 = \sum_1^{K-1} a^k \delta^k + X\beta + \epsilon \quad (\text{A.2})$$

where  $a^k$  denotes each degree.  $\delta^k$  denotes the effect of having a degree compared to not having any degree on the earnings. Individual is selected only if the individual works full time, i.e., under the following condition (selection equation):

$$Full\ Time_i^* = b_0 + b_1 Number\ of\ children_i + b_2 Marital\ Status + \epsilon_i,$$

$$Full\ Time_i = \begin{cases} 1 & \text{if } Full\ Time_i^* > 0 \\ 0 & \text{if } Full\ Time_i^* \leq 0 \end{cases}$$

Results are presented in columns 3 and 5 of Table A.6, for men and women, respectively.

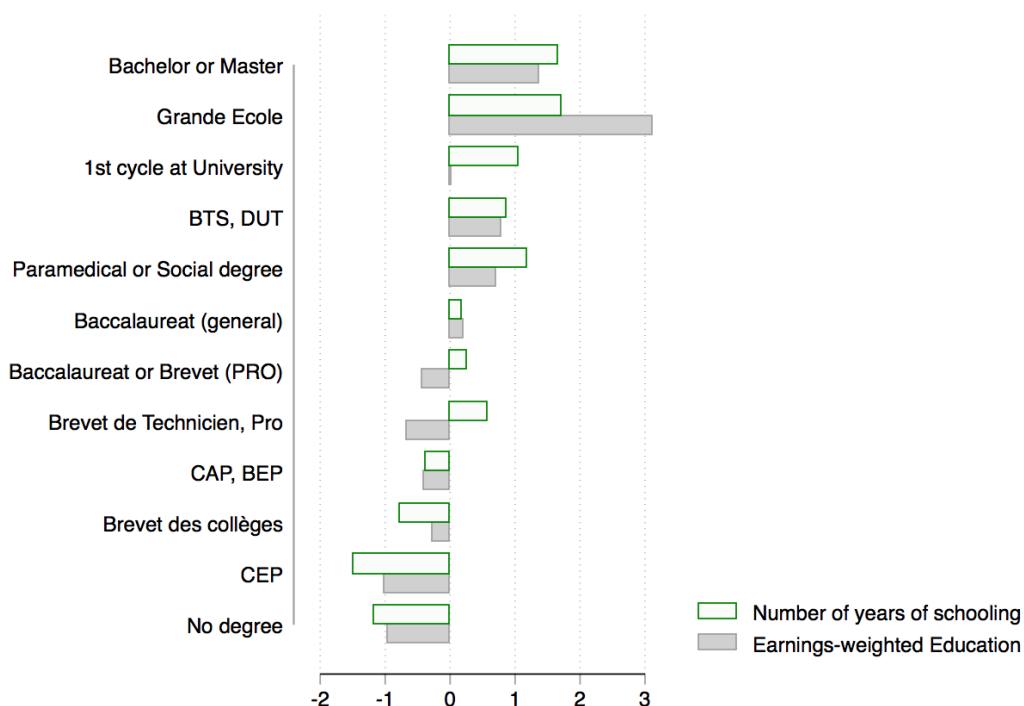
- ii) The Earnings-weighted education is measured by  $\delta^k$ , it is the contribution of each degree to the wage compared to someone who does not have any degree. The measure is summarised in Table A.5 for each gender.

Table A.5 – The Earnings-weighted education Measure

	Men	Women
No Degree	0.00	0.00
CEP	-0.05	0.03
Brevet des Collèges	0.12	0.05
CAP, BEP	0.08	0.05
Brevet de Technicien, Professionnel	0.09	-0.03
Baccalaureat or Brevet (vocational Track)	0.06	0.06
Baccalaureat (general)	0.17	0.11
Paramedical or Social degree	0.25	0.18
BTS, DUT	0.24	0.17
1st cycle of University	0.18	0.07
Grande Ecole	0.51	0.40
Bachelor or Master	0.33	0.23

The wage value for each degree, by gender.

Figure A.1 compares the differences in the hierarchy of the two education measures. To have the same scale, the two variables have been standardised for a mean of 0 and a standard deviation of 1. We can see that the ranking is different. A degree from a Grande Ecole is much more valued when the Earnings-weighted Education is used. On the other hand, the degree from 1st cycle at university and Brevet de technicien, professionnel are much more valued when the number of years of schooling are used.



**Fig. A.1.** Comparison of the two Education measures: number of years of schooling vs Earnings-weighted Education

<sup>25</sup>The "CEP" has been removed in 1989. In the last cohort, we have only 20 individuals who have a CEP.

### A 2.3 Social Position

Since the earnings is not provided for the sibling, we can't look at the earnings directly. We use the social position measured as the average earnings given an occupation and a diploma.

i) For each gender, we estimate Equation A.2 using an OLS model and an Heckman procedure described earlier. Results are shown in Table A.6.

ii) We predict it for all individuals

$$\hat{Y}_1 = \Sigma_1^{K-1} a^k \hat{\delta}^k + X\hat{\beta}$$

In Table A.6, we can see that the results obtained with the two models for men are quite similar, but for women, even if they remain qualitatively similar, the magnitude of the coefficients differ, especially looking at the coefficients of the occupation.

Table A.6 – Estimations of the Social Position

	Men		Women	
	OLS	Heckman	OLS	Heckman
main				
Age	0.07*** (0.02)	0.04+ (0.02)	-0.05 (0.11)	0.02 (0.04)
Age squared	-0.00*** (0.00)	-0.00*** (0.00)	-0.00*** (0.00)	-0.00*** (0.00)
Year of Birth	-0.00 (0.00)	0.00 (0.00)	0.01*** (0.00)	0.01** (0.00)
Year of birth squared	0.00+ (0.00)	0.00* (0.00)	0.00 (0.00)	0.00 (0.00)
Bachelor or Master	0.30*** (0.03)	0.33*** (0.04)	0.33*** (0.04)	0.23*** (0.03)
Grande Ecole	0.49*** (0.04)	0.51*** (0.04)	0.44*** (0.06)	0.40*** (0.06)
1st cycle at University	0.23*** (0.06)	0.18*** (0.05)	0.24*** (0.06)	0.07+ (0.04)

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Table A.6 – *Continued from previous page*

	Men		Women	
	OLS	Heckman	OLS	Heckman
BTS, DUT	0.26*** (0.03)	0.24*** (0.03)	0.29*** (0.04)	0.17*** (0.04)
Paramedical or Social degree	0.26** (0.09)	0.25* (0.11)	0.33*** (0.05)	0.18*** (0.04)
Baccalaureat (general)	0.19*** (0.03)	0.17*** (0.03)	0.20*** (0.03)	0.11*** (0.03)
Baccalaureat or Brevet (vocational track)	0.09** (0.03)	0.06* (0.03)	0.20*** (0.03)	0.06* (0.03)
Brevet de Technicien, Professionnel	0.05 (0.06)	0.09 (0.10)	0.01 (0.07)	-0.03 (0.06)
CAP, BEP	0.13*** (0.02)	0.08*** (0.02)	0.13*** (0.02)	0.05* (0.02)
Brevet des collèges	0.15*** (0.03)	0.12*** (0.03)	0.11*** (0.03)	0.05+ (0.03)
CEP	-0.01 (0.04)	-0.05 (0.03)	0.04 (0.04)	0.03 (0.04)
Grande EcoleXYear of Birth	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
1st cycle at UniversityXYear of Birth	0.00 (0.01)	0.00 (0.00)	-0.01 (0.01)	0.01+ (0.00)
BTS, DUTXYear of Birth	0.01* (0.00)	0.01* (0.00)	0.00+ (0.00)	0.00* (0.00)
Paramedical or Social degreeXYear of Birth	0.01+ (0.01)	0.02 (0.01)	0.01** (0.00)	0.01*** (0.00)

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Table A.6 – *Continued from previous page*

	Men		Women	
	OLS	Heckman	OLS	Heckman
Baccalaureat (general)XYear of Birth	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Baccalaureat or Brevet (vocational track)XYear of Birth	0.02*** (0.00)	0.01*** (0.00)	0.00 (0.00)	0.01** (0.00)
Brevet de Technicien, ProfessionnelXYear of Birth	0.01* (0.00)	0.00 (0.01)	0.02*** (0.00)	0.01*** (0.00)
CAP, BEPXYear of Birth	0.01*** (0.00)	0.01*** (0.00)	0.00+ (0.00)	0.01*** (0.00)
Brevet des collègesXYear of Birth	0.01* (0.00)	0.01* (0.00)	-0.00 (0.00)	0.00 (0.00)
CEPXYear of Birth	0.00 (0.00)	0.01+ (0.00)	-0.00 (0.01)	0.01* (0.00)
No degreeXYear of Birth	0.00 (0.00)	0.01* (0.00)	-0.01+ (0.00)	0.00 (0.00)
Middle-scale Farmers	-3.24* (1.26)	-3.00+ (1.59)	-10.95 (7.18)	-9.34*** (2.21)
Large-scale Farmers	-2.02* (0.99)	-2.01+ (1.13)	-6.45 (6.55)	-2.02 (2.13)
Craftsman	-2.39** (0.92)	-2.32* (0.97)	-7.38 (6.50)	-3.49+ (2.08)
Storekeeper	-2.90** (0.93)	-2.65** (0.99)	-8.55 (6.49)	-3.70+ (2.04)
Firm Manager (> 10 employees)	-1.39 (0.98)	-1.09 (1.01)	-7.57 (6.53)	-2.25 (2.33)

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Table A.6 – *Continued from previous page*

	Men		Women	
	OLS	Heckman	OLS	Heckman
Liberal profession	-1.55 (0.95)	-1.26 (1.07)	-7.83 (6.49)	-3.35+ (2.03)
Civil servant	-1.42 (0.93)	-1.35 (0.95)	-7.72 (6.49)	-3.30+ (2.00)
Professor, scientific occupation	-2.03* (0.92)	-1.78+ (0.95)	-7.86 (6.49)	-3.50+ (2.00)
Information, Arts professions	-2.48** (0.94)	-1.94+ (1.00)	-8.47 (6.49)	-3.68+ (2.01)
Administrative, sales occupations	-0.96 (0.91)	-1.07 (0.94)	-7.21 (6.49)	-2.91 (2.00)
Engineer	-1.35 (0.91)	-1.40 (0.94)	-7.62 (6.49)	-3.45+ (2.00)
Teachers	-2.29* (0.92)	-2.10* (0.94)	-8.16 (6.49)	-3.56+ (1.99)
Health and Social occupations	-1.68+ (0.92)	-1.33 (0.97)	-8.06 (6.49)	-3.88+ (1.99)
Clerical Occupations	-2.55 (3.03)	-1.83 (1.30)	-9.29 (7.09)	-5.40** (2.00)
Public Sector Intermediate Occupations	-1.69+ (0.93)	-1.64+ (0.94)	-8.29 (6.49)	-3.71+ (2.00)
Private Sector Intermediate Occupations	-1.53+ (0.91)	-1.54+ (0.94)	-7.88 (6.48)	-3.51+ (1.99)
Technician	-1.36 (0.91)	-1.41 (0.94)	-7.97 (6.49)	-3.55+ (2.00)

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Table A.6 – *Continued from previous page*

	Men		Women	
	OLS	Heckman	OLS	Heckman
Walking boss	-1.37 (0.91)	-1.32 (0.94)	-8.43 (6.49)	-3.66+ (2.01)
Public Sector Employee	-1.55+ (0.91)	-1.67+ (0.94)	-7.99 (6.48)	-3.60+ (1.99)
Monitoring Agent	-1.43 (0.92)	-1.48 (0.94)	-7.57 (6.50)	-3.43+ (2.00)
Private Sector Administrative Employee	-1.77+ (0.92)	-1.76+ (0.95)	-8.11 (6.48)	-3.66+ (1.99)
Sales Employee	-1.99* (0.92)	-1.84+ (0.94)	-8.20 (6.48)	-3.73+ (1.99)
Personal Services Employee	-1.96* (0.93)	-1.86+ (0.96)	-8.60 (6.48)	-4.04* (1.99)
Skilled Worker in Industries	-1.32 (0.91)	-1.39 (0.94)	-7.86 (6.49)	-3.56+ (2.00)
Skilled Worker in Crafts	-1.53+ (0.91)	-1.61+ (0.94)	-8.23 (6.49)	-4.04* (2.01)
Skilled Worker in Industries	-1.36 (0.91)	-1.45 (0.94)	-8.13 (6.50)	-3.07 (2.09)
Driver	-1.48 (0.92)	-1.56+ (0.94)	-8.19 (6.50)	-3.57+ (2.01)
Unskilled Worker in Industries	-1.98* (0.91)	-1.95* (0.94)	-8.38 (6.49)	-3.90+ (1.99)
Unskilled Worker in Crafts	-1.72+ (0.92)	-1.85+ (0.94)	-8.45 (6.49)	-3.89+ (2.00)

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Table A.6 – *Continued from previous page*

	Men		Women	
	OLS	Heckman	OLS	Heckman
Unskilled Worker in Farms	-2.52** (0.93)	-2.29* (0.96)	-8.14 (6.49)	-3.82+ (2.01)
Middle-scale FarmersXAge	0.08** (0.03)	0.07* (0.04)	0.22 (0.14)	0.23*** (0.04)
Large-scale FarmersXAge	0.06** (0.02)	0.05* (0.03)	0.10 (0.12)	0.02 (0.04)
CraftsmanXAge	0.08*** (0.02)	0.07*** (0.02)	0.13 (0.11)	0.08* (0.04)
StorekeeperXAge	0.09*** (0.02)	0.08*** (0.02)	0.16 (0.11)	0.08* (0.04)
Firm Manager (> 10 employees)XAge	0.08*** (0.02)	0.07** (0.02)	0.16 (0.12)	0.07+ (0.04)
Liberal professionXAge	0.07*** (0.02)	0.06* (0.02)	0.16 (0.11)	0.09* (0.04)
Civil servantXAge	0.08*** (0.02)	0.06** (0.02)	0.16 (0.11)	0.09* (0.04)
Professor, scientific occupationXAge	0.09*** (0.02)	0.07** (0.02)	0.17 (0.11)	0.09* (0.04)
Information, Arts professionsXAge	0.09*** (0.02)	0.07** (0.02)	0.17 (0.11)	0.09* (0.04)
Administrative, sales occupationsXAge	0.07*** (0.02)	0.06** (0.02)	0.16 (0.11)	0.08* (0.04)
EngineerXAge	0.08*** (0.02)	0.07** (0.02)	0.17 (0.11)	0.09** (0.04)

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Table A.6 – *Continued from previous page*

	Men		Women	
	OLS	Heckman	OLS	Heckman
TeachersXAge	0.08*** (0.02)	0.07** (0.02)	0.16 (0.11)	0.09* (0.04)
Health and Social occupationsXAge	0.07*** (0.02)	0.06* (0.02)	0.16 (0.11)	0.09** (0.04)
Clerical OccupationsXAge	0.08 (0.06)	0.06* (0.03)	0.19 (0.13)	0.11** (0.04)
Public Sector Intermediate OccupationsXAge	0.08*** (0.02)	0.06** (0.02)	0.17 (0.11)	0.09* (0.04)
Private Sector Intermediate OccupationsXAge	0.07*** (0.02)	0.06** (0.02)	0.16 (0.11)	0.09* (0.04)
TechnicianXAge	0.07*** (0.02)	0.06** (0.02)	0.16 (0.11)	0.09* (0.04)
Walking bossXAge	0.07*** (0.02)	0.06** (0.02)	0.17 (0.11)	0.09* (0.04)
Public Sector EmployeeXAge	0.06*** (0.02)	0.06** (0.02)	0.16 (0.11)	0.08* (0.04)
Monitoring AgentXAge	0.07*** (0.02)	0.06** (0.02)	0.15 (0.11)	0.08* (0.04)
Private Sector Administrative EmployeeXAge	0.07*** (0.02)	0.06** (0.02)	0.16 (0.11)	0.09* (0.04)
Sales EmployeeXAge	0.07*** (0.02)	0.06** (0.02)	0.16 (0.11)	0.08* (0.04)
Personal Services EmployeeXAge	0.07*** (0.02)	0.06** (0.02)	0.15 (0.11)	0.08* (0.04)

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Table A.6 – *Continued from previous page*

	Men		Women	
	OLS	Heckman	OLS	Heckman
Skilled Worker in IndustriesXAge	0.06*** (0.02)	0.05* (0.02)	0.15 (0.11)	0.08* (0.04)
Skilled Worker in CraftsXAge	0.06*** (0.02)	0.06* (0.02)	0.16 (0.11)	0.09* (0.04)
Skilled Worker in IndustriesXAge	0.06** (0.02)	0.05* (0.02)	0.15 (0.11)	0.07+ (0.04)
DriverXAge	0.06*** (0.02)	0.06* (0.02)	0.16 (0.11)	0.08* (0.04)
Unskilled Worker in IndustriesXAge	0.07*** (0.02)	0.06** (0.02)	0.16 (0.11)	0.08* (0.04)
Unskilled Worker in CraftsXAge	0.06** (0.02)	0.06** (0.02)	0.15 (0.11)	0.08* (0.04)
Unskilled Worker in FarmsXAge	0.08*** (0.02)	0.07** (0.02)	0.14 (0.11)	0.08* (0.04)
Constant	8.07*** (0.92)	9.02*** (0.94)	14.61* (6.49)	11.10*** (2.00)
select				
Married		0.14*** (0.02)		-0.07*** (0.01)
Widowed		-0.17* (0.07)		-0.11** (0.04)
Divorced		-0.08** (0.03)		0.03+ (0.02)
Number of children		-0.00 (0.01)		-0.12*** (0.01)

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Table A.6 – *Continued from previous page*

	Men		Women	
	OLS	Heckman	OLS	Heckman
Constant		0.57*** (0.02)		0.22*** (0.02)
athrho				
Constant		-1.43*** (0.03)		-1.81*** (0.04)
lnsigma				
Constant		-0.16*** (0.02)		0.05* (0.02)
Observations	18963	23203	18814	25624
$R^2$	0.235		0.255	
Adjusted $R^2$	0.231		0.252	

Standard errors in parentheses. +  $p < 0.1$ , \* $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

*Source:* All respondents from the Dataset "Formation et Qualification Professionnelle" (INSEE), waves 2003 and 2014, born between 1946 and 1988.

Some summary statistics for the two measures and the observed log of earnings for each gender are reported in Table A.7. We recover the same mean than the observed one with a smaller variance. Their distributions for each gender are shown in Figure A.2.

In the main body of the paper, we use the prediction from Heckman estimation. We compare the results using the two different measures in Tables A.8 and A.9. Results are qualitatively similar, but the effects are slightly less negative using the Heckman procedure.

I add residual from a normal distribution to the actual measures. Main results for the main model using these noisy measures are in Table A.10. Results are qualitatively similar.

Table A.7 – Observed Earnings and Predicted Earnings (Social Position)

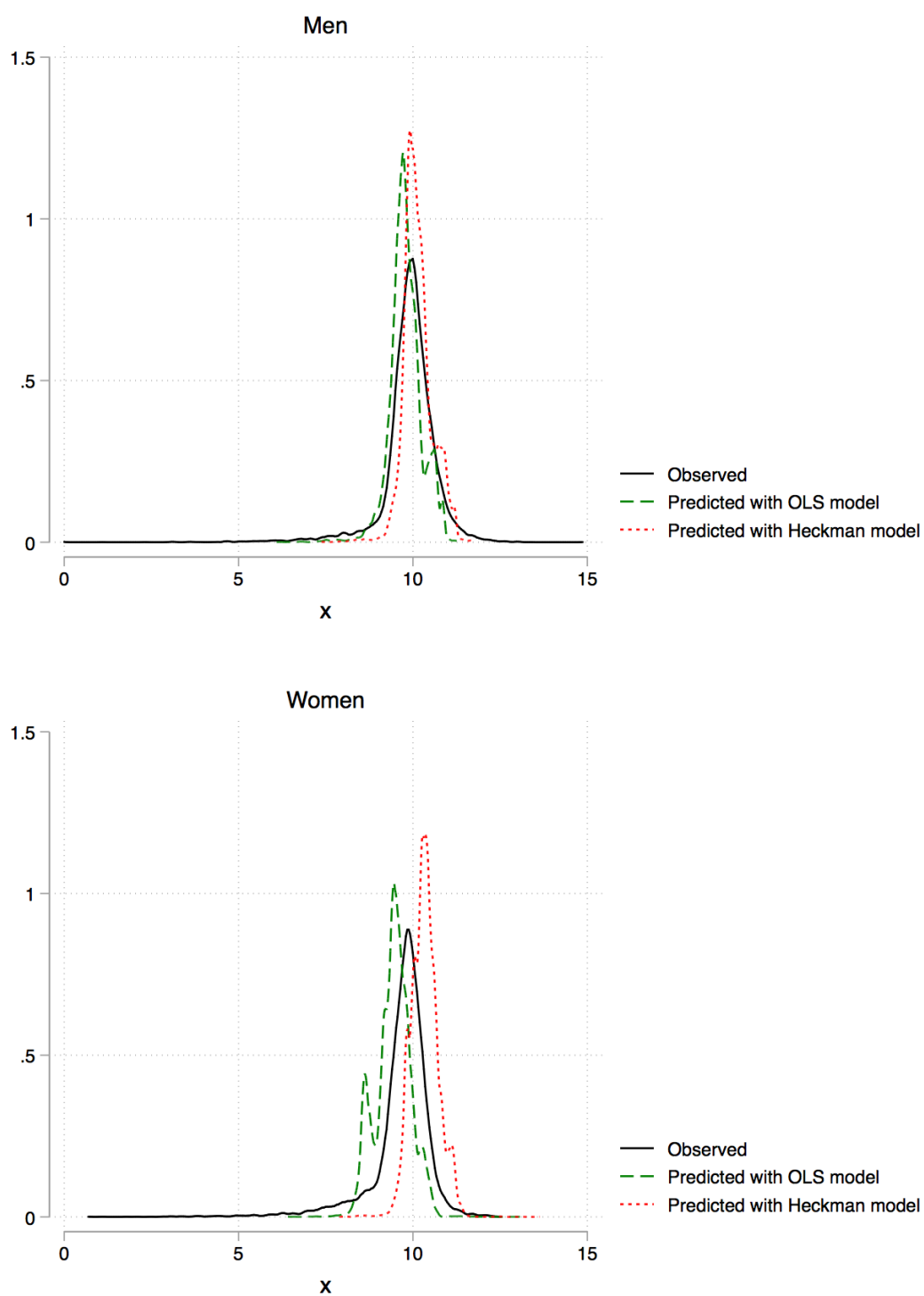
***Panel A : Men***

	mean	sd	min	max
Observed	9.91	0.80	0.00	14.87
Predicted with Heckman model	10.18	0.38	7.91	11.70
Predicted with OLS model	9.87	0.41	6.81	11.25
Observations	15421			

***Panel B : Women***

	mean	sd	min	max
Observed	9.66	0.89	0.69	12.53
Predicted with Heckman model	10.39	0.38	8.41	11.64
Predicted with OLS model	9.53	0.47	7.64	10.70
Observations	11079			

*Source:* Respondents to "Formation et Qualification Professionnelle" survey (INSEE), waves 2003 and 2014.



**Fig. A.2.** Comparison of the two Social Position measures and the observed Earnings.

Table A.8 – Effect of a parental separation on Social Position

	Social Position estimated by OLS		Social Position estimated by Heckman procedure	
	Random Effects	Sibling Difference	Random Effects	Sibling Difference
0-3 at divorce	−0.09*** (0.02)	−0.07 (0.06)	−0.08*** (0.02)	−0.05 (0.04)
4-6 at divorce	−0.10*** (0.02)	−0.12* (0.05)	−0.09*** (0.01)	−0.09* (0.04)
7-9 at divorce	−0.04** (0.02)	−0.04 (0.04)	−0.05*** (0.01)	−0.04 (0.03)
10-12 at divorce	−0.06*** (0.02)	−0.10** (0.04)	−0.06*** (0.01)	−0.08** (0.03)
13-15 at divorce	−0.06*** (0.02)	−0.06+ (0.03)	−0.05*** (0.01)	−0.05+ (0.03)
16-18 at divorce	−0.04* (0.02)	−0.04 (0.03)	−0.04** (0.01)	−0.04 (0.02)
Ref. Group : 19+ at divorce	0.00 (0.01)		0.01 (0.01)	
Constant	11.00*** (0.45)	12.52*** (0.15)	11.12*** (0.35)	12.64*** (0.10)
Observations	54570	54570	54570	54570

Standard errors in parentheses, clustered at the family level and bootstrapped using 500 replications. +  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

*Note:* Social position is the average earnings estimated separately for each gender by OLS (Columns 1 and 2), or on full-time workers with an Heckman procedure to account for the absence of part-time workers and inactive individuals (Columns 3 and 4). Individual characteristics, such as sex, year of birth and its quadratic term, his age and its quadratic term, birth order and a dummy indicating if the individual is the last born of the sibship are all controlled for, as are family background variables, such as parents degree and profession, parents' country of birth, mother's year of birth, family size and its quadratic term, and region of birth.

*Source:* Estimation sample drawn from the Dataset "Formation et Qualification Professionnelle" (INSEE), waves 2003 and 2014. Individuals are born between 1946 and 1988. Siblings who experience a parental separation in the same age group are excluded, to avoid identification issues.

Table A.9 – Effect of a parental separation on Social Position

	Social Position estimated by OLS		Social Position estimated by Heckman procedure	
	Random Effects	Sibling Difference	Random Effects	Sibling Difference
0-3 at divorce	−0.09*** (0.02)	−0.04 (0.06)	−0.08*** (0.02)	−0.03 (0.04)
4-6 at divorce	−0.10*** (0.02)	−0.09 (0.06)	−0.09*** (0.02)	−0.07+ (0.04)
7-9 at divorce	−0.04* (0.02)	−0.01 (0.05)	−0.05*** (0.01)	−0.02 (0.03)
10-12 at divorce	−0.06** (0.02)	−0.08+ (0.04)	−0.06*** (0.01)	−0.07* (0.03)
13-15 at divorce	−0.05** (0.02)	−0.04 (0.04)	−0.05*** (0.01)	−0.04 (0.03)
16-18 at divorce	−0.05** (0.02)	−0.03 (0.03)	−0.04** (0.01)	−0.03 (0.02)
Ref. Group : 19+ at divorce	0.00 (0.01)		0.01 (0.01)	
Constant	10.18*** (0.50)	12.66*** (0.17)	10.31*** (0.42)	12.76*** (0.14)
Observations	50516	50516	50516	50516

Standard errors in parentheses, clustered at the family level and bootstrapped using 500 replications. +  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

*Note:* Social position is the average earnings estimated separately for each gender by OLS (Columns 1 and 2), or on full-time workers with an Heckman procedure to account for the absence of part-time workers and inactive individuals (Columns 3 and 4). Individual characteristics, such as sex, year of birth and its quadratic term, his age and its quadratic term, birth order and a dummy indicating if the individual is the last born of the sibship are all controlled for, as are family background variables, such as parents degree and profession, parents' country of birth, mother's year of birth, family size and its quadratic term, and region of birth.

*Source:* Estimation sample drawn from the Dataset "Formation et Qualification Professionnelle" (INSEE), waves 2003 and 2014. Individuals are born between 1946 and 1988. Siblings who experience a parental separation in the same age group or with an age difference larger than ten years are excluded.

Table A.10 – Effect of a parental separation (measures with noise)

	Schooling		Earnings-weighted Education		Social Position	
	Random Effects	Sibling Difference	Random Effects	Sibling Difference	Random Effects	Sibling Difference
0-3 at divorce	−0.90*** (0.13)	−0.46+ (0.27)	−0.04** (0.01)	−0.03 (0.03)	−0.11*** (0.02)	−0.09+ (0.05)
4-6 at divorce	−0.88*** (0.11)	−0.56* (0.23)	−0.05*** (0.01)	−0.04 (0.03)	−0.12*** (0.02)	−0.11** (0.04)
7-9 at divorce	−0.60*** (0.10)	−0.34+ (0.19)	−0.02* (0.01)	−0.03 (0.03)	−0.07*** (0.02)	−0.07+ (0.04)
10-12 at divorce	−0.70*** (0.10)	−0.57*** (0.17)	−0.03*** (0.01)	−0.03 (0.02)	−0.10*** (0.02)	−0.11** (0.03)
13-15 at divorce	−0.68*** (0.09)	−0.56*** (0.16)	−0.02** (0.01)	−0.03 (0.02)	−0.07*** (0.02)	−0.06+ (0.03)
16-18 at divorce	−0.34*** (0.09)	−0.31* (0.15)	−0.01 (0.01)	−0.01 (0.02)	−0.05** (0.02)	−0.03 (0.03)
Ref. Group : 19+ at divorce	0.10 (0.07)		0.00 (0.01)		0.03* (0.01)	
Constant	40.73*** (2.41)	13.46*** (0.03)	1.50*** (0.24)	0.10*** (0.00)	13.33*** (0.40)	10.45*** (0.01)
Observations	56876	56876	56876	56876	54570	54570

Standard errors in parentheses, clustered at the family level and bootstrapped using 500 replications. +  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

*Note:* Schooling is a proxy for the number of years of schooling. Earnings-weighted education is the wage value of the individual's highest degree (compared to no degree at all). Social position is the average earnings estimated separately for each gender on full-time workers with an Heckman procedure to account for the absence of part-time workers and inactive individuals. A noise is added to each outcome variable. Individual characteristics, such as sex, year of birth and its quadratic term, his age and its quadratic term, birth order and a dummy indicating if the individual is the last born of the sibship are all controlled for, as are family background variables, such as parents degree and profession, parents' country of birth, mother's year of birth, family size and its quadratic term, and region of birth.

*Source:* Estimation sample drawn from the Dataset "Formation et Qualification Professionnelle" (INSEE), waves 2003 and 2014. Individuals are born between 1946 and 1988. Siblings who experience a parental separation in the same age group are excluded, to avoid identification issues.



### A 3 More descriptive statistics

Table A11 presents the summary statistics for three samples: “All” which refers to the entire population of the dataset, “Sample 1” which refers to the sample excluding the only children, and “Sample 2” which refers to the sample use in the main body of the paper, that excludes siblings experiencing a divorce in the same age group. As we can see, the subsamples are quite similar. Therefore the sample I am using is still representative of the whole population.

Table A.11 – Comparison of our sample to whole population of the dataset

	All	Sample 1	Sample 2
	mean	mean	mean
Schooling	13.47	13.48	13.47
Social Position	10.24	10.24	10.24
Earnings-weighted Education	0.12	0.12	0.12
0-3 at divorce	0.01	0.01	0.00
4-6 at divorce	0.01	0.01	0.01
7-9 at divorce	0.01	0.01	0.01
10-12 at divorce	0.01	0.01	0.01
13-15 at divorce	0.01	0.01	0.01
16-18 at divorce	0.01	0.01	0.01
Man	0.49	0.49	0.49
Year of birth	1964.22	1964.22	1964.13
Father: No degree	0.29	0.29	0.29
Father: Primary, Secondary School Degreee	0.35	0.35	0.35
Father: CAP, BEP	0.19	0.19	0.19
Father: Brevet (vocational track)	0.01	0.01	0.01
Father: Baccalaureat	0.05	0.05	0.05
Father: BAC + 2	0.03	0.03	0.03
Father: Supérieur à BAC + 2	0.07	0.08	0.07
Father: Farmer	0.10	0.10	0.11
Father: Self-employed	0.12	0.12	0.12
Father: White Collars	0.10	0.10	0.10
Father: Mid-level Profession	0.14	0.14	0.14
Father: Employee	0.09	0.09	0.09
Father: Manual Worker	0.37	0.37	0.37

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Table A.11 – *Continued from previous page*

	All	Sample 1	Sample 2
Father: Retired	0.06	0.06	0.06
Father: Other	0.02	0.02	0.02
Mother: No degree	0.34	0.34	0.34
Mother: Primary, Secondary School Degreee	0.40	0.40	0.40
Mother: CAP, BEP	0.12	0.12	0.12
Mother: Brevet (vocational track)	0.01	0.01	0.01
Mother: Baccalaureat	0.06	0.06	0.06
Mother: BAC + 2	0.04	0.04	0.04
Mother: Supérieur à BAC + 2	0.04	0.04	0.04
Mother: Farmer	0.08	0.08	0.08
Mother: Self-employed	0.05	0.05	0.05
Mother: White Collars	0.02	0.02	0.02
Mother: Mid-level Profession	0.07	0.07	0.07
Mother: Employee	0.21	0.21	0.21
Mother: Manual Worker	0.08	0.08	0.08
Mother: Retired	0.02	0.02	0.02
Mother: Other	0.46	0.46	0.46
Sibling Size	2.73	2.72	2.73
Sibling Size squared	11.45	11.34	11.40
Region of birth: Ile de France	0.14	0.14	0.14
Region of birth: North West	0.20	0.20	0.20
Region of birth: North	0.10	0.10	0.10
Region of birth: East	0.11	0.11	0.11
Region of birth: West	0.17	0.17	0.17
Region of birth: South West	0.09	0.09	0.09
Region of birth: South East	0.18	0.18	0.18
Region of birth: Corse	0.00	0.00	0.00
Region of birth: Oversea	0.01	0.01	0.01
Mother nationality: French	0.94	0.94	0.94
Mother nationality: European	0.04	0.04	0.04
Mother nationality: Other	0.02	0.02	0.02
Father nationality: French	0.93	0.93	0.93

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Table A.11 – *Continued from previous page*

	All	Sample 1	Sample 2
Father nationality: European	0.05	0.05	0.05
Father nationality: Other	0.02	0.02	0.02
Mother Year of Birth	1937.35	1937.36	1937.22
Last born	0.38	0.38	0.38
Age	43.21	43.12	43.18
1st born	0.37	0.37	0.37
2nd born	0.31	0.31	0.31
3rd born	0.16	0.16	0.16
4th born	0.07	0.07	0.07
5th born	0.04	0.04	0.04
6th born	0.02	0.02	0.02
7th born	0.01	0.01	0.01
8th born	0.01	0.01	0.01
Observations	58903	57932	56876
Only_Child	Included	Excluded	Excluded
Same_age_group	Included	Included	Excluded

*Notes:* Summary statistics for the three samples. “All” refers to the entire population of the dataset, “Sample 1” refers to the sample excluding the only children, and “Sample 2” refers to the sample used in the main body of the paper, that excludes siblings experiencing a divorce in the same age group.

*Source:* *Formation et Qualification Professionnelle, waves 3003 and 2014.*

### Question bias

Table A.13 compares the age at divorce of the respondents and their siblings. The respondents’ siblings are 8 months older in average at the moment of the divorce. They are more represented in the 0-3 year-olds and over the age of 19. Table A.14 compares the family characteristics of the respondents who declare a divorce after age 16, and respondents’ siblings who experience a divorce after age 16. Respondents who declare a parental separation after the age of 16 are in average younger. Their father are more likely to be white collars, and less likely to be manual workers, their family is smaller, than Siblings who were older than 16 at the moment of their parents separation. These differences are significant, but robustness checks show that the question bias is negligible.

Table A.12 – Differences between respondents whose parents are separated or not.

	Non separated parents	Separated parents	Gap (b/se)
Year of birth	1964.09	1969.31	-5.217** (0.18)
Mother: No degree	0.40	0.32	0.071** (0.01)
Mother: Primary, Secondary School Degreee	0.36	0.30	0.064** (0.01)
Mother: CAP, BEP	0.11	0.14	-0.036** (0.01)
Mother: Brevet (vocational track)	0.01	0.01	-0.002 (0.00)
Mother: Baccalaureat	0.05	0.09	-0.034** (0.00)
Mother: BAC + 2	0.04	0.07	-0.029** (0.00)
Mother: Supérieur à BAC + 2	0.03	0.07	-0.035** (0.00)
Mother: Farmer	0.08	0.01	0.066** (0.00)
Mother: Self-employed	0.05	0.05	0.000 (0.00)
Mother: White Collars	0.02	0.04	-0.023** (0.00)
Mother: Mid-level Profession	0.07	0.13	-0.065** (0.00)
Mother: Employee	0.20	0.35	-0.153** (0.01)
Mother: Manual Worker	0.08	0.11	-0.029** (0.00)
Mother: Retired	0.02	0.02	0.001 (0.00)
Mother: Other	0.49	0.29	0.203**

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Table A.12 – *Continued from previous page*

	Non separated parents	Separated parents	Gap (b/se)
			(0.01)
Father: No degree	0.33	0.28	0.046**
			(0.01)
Father: Primary, Secondary School Degreee	0.33	0.26	0.065**
			(0.01)
Father: CAP, BEP	0.18	0.21	-0.031**
			(0.01)
Father: Brevet (vocational track)	0.01	0.01	-0.002
			(0.00)
Father: Baccalaureat	0.05	0.08	-0.025**
			(0.00)
Father: BAC + 2	0.03	0.04	-0.014**
			(0.00)
Father: Supérieur à BAC + 2	0.08	0.12	-0.038**
			(0.01)
Father: Farmer	0.10	0.02	0.080**
			(0.01)
Father: Self-employed	0.12	0.14	-0.029**
			(0.01)
Father: White Collars	0.10	0.14	-0.039**
			(0.01)
Father: Mid-level Profession	0.13	0.16	-0.029**
			(0.01)
Father: Employee	0.09	0.11	-0.024**
			(0.01)
Father: Manual Worker	0.38	0.35	0.032**
			(0.01)
Father: Retired	0.07	0.05	0.018**
			(0.00)
Father: Other	0.01	0.02	-0.009**
			(0.00)
Sibling Size	2.93	2.61	0.324**

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Table A.12 – *Continued from previous page*

	Non separated parents	Separated parents	Gap (b/se)
			(0.04)
Region of birth: Ile de France	0.13	0.19	-0.056**
			(0.01)
Region of birth: North West	0.20	0.20	0.002
			(0.01)
Region of birth: North	0.10	0.09	0.012*
			(0.01)
Region of birth: East	0.11	0.09	0.015*
			(0.01)
Region of birth: West	0.17	0.13	0.042**
			(0.01)
Region of birth: South West	0.09	0.09	0.001
			(0.01)
Region of birth: South East	0.18	0.18	-0.003
			(0.01)
Region of birth: Corse	0.00	0.00	0.000
			(0.00)
Region of birth: Oversea	0.01	0.02	-0.012**
			(0.00)
Observations	40657		

*Notes:* +  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

The first column shows the means for respondents whose parents are not separated, the second columns shows the means for respondents whose parents are separated, the last column is a t-test.

*Sources:* Estimation sample drawn from the Dataset "Formation et Qualification Professionnelle" (INSEE), waves 2003 and 2014.

Table A.13 – Differences in age at divorce between Respondents and Respondents' Siblings

	Respondents' Siblings	Respondents	Gap (b/se)
Age at divorce	13.17	12.62	0.544** (0.19)
0-3 at divorce	0.09	0.07	0.015+ (0.01)
4-6 at divorce	0.10	0.10	-0.000 (0.01)
7-9 at divorce	0.14	0.13	0.001 (0.01)
10-12 at divorce	0.15	0.16	-0.013 (0.01)
13-15 at divorce	0.16	0.21	-0.054** (0.01)
16-18 at divorce	0.14	0.17	-0.037** (0.01)
19 and more at divorce	0.23	0.14	0.087** (0.01)
Observations	4405		

+  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

*Note:* The first column is the average age at separation for respondents' siblings, the second column shows the average age at separation for respondents. The last column shows the results of a t-test.

*Source:* Estimation sample drawn from the Dataset "Formation et Qualification Professionnelle" (INSEE), waves 2003 and 2014. Only individuals whose parents are separated are included.

Table A.14 – Differences between Respondents and Siblings older than 16 at the moment of the divorce among divorced families.

	Respondents' Siblings	Respondents	Gap (b/se)
Year of birth	1966.88	1969.72	-2.845** (0.55)
Mother: No degree	0.22	0.19	0.033 (0.02)
Mother: Primary, Secondary School Degreee	0.36	0.36	0.007 (0.03)
Mother: CAP, BEP	0.17	0.17	-0.004 (0.02)
Mother: Brevet (vocational track)	0.02	0.02	-0.000 (0.01)
Mother: Baccalaureat	0.08	0.09	-0.013 (0.02)
Mother: BAC + 2	0.08	0.10	-0.014 (0.02)
Mother: Supérieur à BAC + 2	0.07	0.07	-0.008 (0.01)
Mother: Farmer	0.01	0.02	-0.005 (0.01)
Mother: Self-employed	0.05	0.06	-0.007 (0.01)
Mother: White Collars	0.04	0.06	-0.014 (0.01)
Mother: Mid-level Profession	0.14	0.16	-0.025 (0.02)
Mother: Employee	0.37	0.33	0.032 (0.03)
Mother: Manual Worker	0.08	0.06	0.013 (0.01)
Mother: Retired	0.03	0.02	0.009 (0.01)
Mother: Other	0.28	0.29	-0.004

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Table A.14 – *Continued from previous page*

	Respondents' Siblings	Respondents	Gap (b/se)
			(0.03)
Father: No degree	0.23	0.19	0.035
			(0.02)
Father: Primary, Secondary School Degreee	0.29	0.26	0.024
			(0.02)
Father: CAP, BEP	0.22	0.24	-0.025
			(0.02)
Father: Brevet (vocational track)	0.02	0.02	0.003
			(0.01)
Father: Baccalaureat	0.08	0.10	-0.020
			(0.02)
Father: BAC + 2	0.05	0.05	-0.005
			(0.01)
Father: Supérieur à BAC + 2	0.12	0.13	-0.013
			(0.02)
Father: Farmer	0.03	0.03	0.004
			(0.01)
Father: Self-employed	0.13	0.16	-0.028
			(0.02)
Father: White Collars	0.15	0.19	-0.049*
			(0.02)
Father: Mid-level Profession	0.17	0.18	-0.014
			(0.02)
Father: Employee	0.12	0.12	-0.002
			(0.02)
Father: Manual Worker	0.30	0.23	0.069**
			(0.02)
Father: Retired	0.07	0.05	0.016
			(0.01)
Father: Other	0.04	0.04	0.005
			(0.01)
Sibling Size	2.41	2.20	0.208*

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Table A.14 – *Continued from previous page*

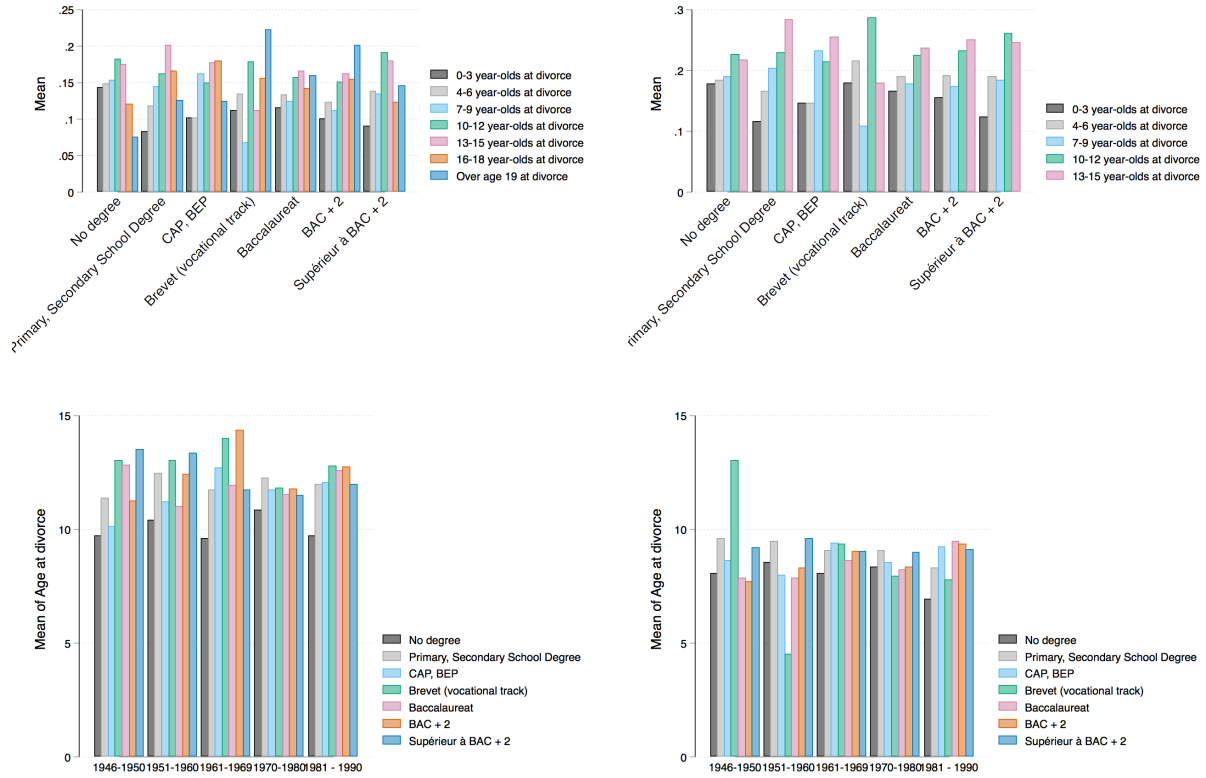
	Respondents' Siblings	Respondents	Gap (b/se)
			(0.09)
Region of birth: Ile de France	0.19	0.20	-0.012
			(0.02)
Region of birth: North West	0.20	0.18	0.015
			(0.02)
Region of birth: North	0.08	0.07	0.009
			(0.01)
Region of birth: East	0.10	0.08	0.017
			(0.02)
Region of birth: West	0.12	0.13	-0.010
			(0.02)
Region of birth: South West	0.09	0.10	-0.005
			(0.02)
Region of birth: South East	0.20	0.20	-0.005
			(0.02)
Region of birth: Corse	0.00	0.00	-0.002
			(0.00)
Region of birth: Oversea	0.01	0.02	-0.006
			(0.01)
Observations	1293		

*Notes:* +  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

The first column shows the means for respondents' siblings who were older than 16 when their parents separated, the second columns shows the means for respondents who were older than 16 at the moment of the separation. This last group might be concerned by a question bias.

The last column is a t-test.

*Sources:* Estimation sample drawn from the Dataset "Formation et Qualification Professionnelle" (INSEE), waves 2003 and 2014. Only those whose parents are separated after the age of 16 are included



**Fig. A.3.** Child's age at separation across parents' education and cohorts. The upper graph shows the distribution of children of divorced families by age group over mother's education. (In the graph on the left, among divorced families children with a mother with BAC+2 and more, 15% are over age 18 when the separation occurs). The bottom graph shows child's age at divorce across generations and across mother's education. (Children of divorced families, born in 1946-1950, with mothers with no degree are on average 10 years old when the divorce occurs) In the two graph at the right, all the individuals who declare a divorce after age 16 are excluded from the sample.

## A 4 More results : Continuous models

Table A.15 – Continuous model

	Schooling		Earnings-weighted Education		Social Position	
	Random Effects	Sibling Difference	Random Effects	Sibling Difference	Random Effects	Sibling Difference
Age at divorce	−0.0209*** (0.00191)	0.0175 (0.0134)	−0.000877*** (0.0000897)	0.000946+ (0.000543)	−0.00179*** (0.000275)	0.00338+ (0.00183)
Constant	37.92*** (2.245)	13.73*** (0.631)	1.481*** (0.0960)	0.154*** (0.0293)	11.00*** (0.365)	12.64*** (0.122)
Observations	56876	56876	56876	56876	54570	54570

	Schooling		Earnings-weighted Education		Social Position	
	Random Effects	Sibling Difference	Random Effects	Sibling Difference	Random Effects	Sibling Difference
Age at divorce	−0.0998*** (0.00786)	0.000924 (0.0347)	−0.00419*** (0.000317)	0.000323 (0.00165)	−0.00898*** (0.00103)	0.00158 (0.00557)
Age at divorce squared	0.00461*** (0.000473)	0.000621 (0.00124)	0.000195*** (0.0000193)	0.0000233 (0.0000602)	0.000426*** (0.0000604)	0.0000668 (0.000196)
Constant	38.96*** (2.245)	13.73*** (0.593)	1.523*** (0.1000)	0.154*** (0.0285)	11.07*** (0.390)	12.64*** (0.122)
Observations	56876	56876	56876	56876	54570	54570

Standard errors in parentheses, clustered at the family level and bootstrapped using 500 replications. +  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

*Note:* Schooling is a proxy for the number of years of schooling. Earnings-weighted education is the wage value of the individual's highest degree (compared to no degree at all). Social position is the average earnings estimated separately for each gender on full-time workers with an Heckman procedure to account for the absence of part-time workers and inactive individuals. See Section A 2 for a more detailed description. Individual characteristics, such as sex, year of birth and its quadratic term, his age and its quadratic term, birth order and a dummy indicating if the individual is the last born of the sibship are all controlled for, as are family background variables, such as parents degree and profession, parents' country of birth, mother's year of birth, family size and its quadratic term, and region of birth.

*Source:* Estimation sample drawn from the Dataset "Formation et Qualification Professionnelle" (INSEE), waves 2003 and 2014. Individuals are born between 1946 and 1988. The sample used is the same than for the previous specification. Siblings who experience a parental separation in the same age group are excluded.

## A 5 Detailed heterogeneity of the effect of divorce

Table A.16 – Heterogeneous divorce effect according to gender

	Schooling			Earnings-weighted Education			Social Position		
	Boys	Girls		Boys	Girls		Boys	Girls	
0-3 at divorce	−1.03*** (0.14)	−0.91*** (0.11)		−0.05*** (0.01)	−0.03*** (0.00)		−0.06*** (0.02)	−0.08*** (0.01)	
0-3 at divorce=1XMale=1			−0.11 (0.24)		−0.01 (0.01)				0.04 (0.03)
4-6 at divorce	−0.77*** (0.08)	−0.79*** (0.09)		−0.04*** (0.00)	−0.03*** (0.00)		−0.07*** (0.01)	−0.08*** (0.01)	
4-6 at divorce=1XMale=1			−0.07 (0.16)		−0.01+ (0.01)				0.03 (0.02)
7-9 at divorce	−0.64*** (0.07)	−0.34*** (0.07)		−0.04*** (0.00)	−0.01*** (0.00)		−0.07*** (0.01)	−0.00 (0.01)	
7-9 at divorce=1XMale=1			−0.44** (0.14)		−0.03*** (0.01)				−0.04* (0.02)
10-12 at divorce	−0.71*** (0.06)	−0.48*** (0.06)		−0.03*** (0.00)	−0.01*** (0.00)		−0.07*** (0.01)	−0.03*** (0.01)	
10-12 at divorce=1XMale=1			−0.33** (0.11)		−0.02*** (0.01)				−0.02 (0.02)
13-15 at divorce	−0.61*** (0.06)	−0.51*** (0.06)		−0.03*** (0.00)	−0.01*** (0.00)		−0.03*** (0.01)	−0.04*** (0.01)	
13-15 at divorce=1XMale=1			−0.16 (0.11)		−0.01 (0.01)				0.03 (0.02)
16-18 at divorce	−0.18** (0.07)	−0.26*** (0.07)		−0.01 (0.00)	−0.01*** (0.00)		−0.03** (0.01)	−0.03*** (0.01)	
16-18 at divorce=1XMale=1			−0.08 (0.13)		0.01 (0.01)				0.02 (0.02)
19 and more at divorce	0.19** (0.06)	0.06 (0.08)		0.00 (0.00)	−0.00 (0.00)		0.01 (0.01)	0.01 (0.01)	
19 and more at divorce=1XMale=1			0.03 (0.17)		0.01+ (0.01)				0.02 (0.02)
Observations	25933	26669	52602	25933	26669	52602	25204	25312	50516

Standard errors in parentheses, clustered at the family level and bootstrapped using 500 replications. +  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

*Note:* Random effects results. See previous tables for the description of the outcomes and the controls.

*Source:* Estimation sample drawn from the Dataset "Formation et Qualification Professionnelle" (INSEE), waves 2003 and 2014. Individuals are born between 1946 and 1988. Siblings who experience a parental separation in the same age group or with an age difference larger than ten years are excluded.

Table A.17 – Heterogeneous divorce effect according to mother's education (Random Effects)

	Schooling			Earnings-weighted Education			Social Position		
	Less educated	Educated		Less educated	Educated		Less educated	Educated	
0-3	-0.54*** (0.15)	-1.20*** (0.13)		-0.02*** (0.01)	-0.05*** (0.01)		-0.04+ (0.02)	-0.08*** (0.02)	
0-3=1XLess=1			0.76*** (0.21)			0.03*** (0.01)			0.06* (0.03)
4-6	-0.63*** (0.11)	-0.87*** (0.11)		-0.02*** (0.00)	-0.04*** (0.00)		-0.05* (0.02)	-0.10*** (0.01)	
4-6=1XLess=1			0.35* (0.16)			0.02** (0.01)			0.07** (0.02)
7-9	-0.29** (0.11)	-0.64*** (0.08)		-0.01*** (0.00)	-0.03*** (0.00)		-0.03* (0.01)	-0.04*** (0.01)	
7-9=1XLess=1			0.45*** (0.14)			0.02*** (0.01)			0.02 (0.02)
10-12	-0.48*** (0.09)	-0.67*** (0.08)		-0.02*** (0.00)	-0.02*** (0.00)		-0.01 (0.01)	-0.07*** (0.01)	
10-12=1XLess=1			0.30* (0.12)			0.01* (0.00)			0.08*** (0.02)
13-15	-0.48*** (0.10)	-0.60*** (0.07)		-0.01** (0.00)	-0.03*** (0.00)		-0.01 (0.02)	-0.05*** (0.01)	
13-15=1XLess=1			0.22* (0.11)			0.02** (0.01)			0.06*** (0.02)
16-18	0.22 (0.14)	-0.41*** (0.07)		0.01 (0.01)	-0.01*** (0.00)		0.03+ (0.02)	-0.05*** (0.01)	
16-18=1XLess=1			0.75*** (0.16)			0.03*** (0.01)			0.09*** (0.02)
19 -	0.65*** (0.17)	0.02 (0.10)		0.02* (0.01)	-0.00 (0.00)		0.08** (0.03)	-0.01 (0.01)	
19 -=1XLess=1			0.75*** (0.21)			0.02** (0.01)			0.10*** (0.03)
Observations	17494	35108	52602	17494	35108	52602	16534	33982	50516

Standard errors in parentheses, clustered at the family level and bootstrapped using 500 replications. +  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

*Note:* Random effects results. See previous tables for the description of the outcomes and the controls.

*Source:* Estimation sample drawn from the Dataset "Formation et Qualification Professionnelle" (INSEE), waves 2003 and 2014. Individuals are born between 1946 and 1988. Siblings who experience a parental separation in the same age group or with an age difference larger than ten years are excluded.

Table A.18 – Heterogeneous divorce effect according to mother's education (Fixed effects)

	Schooling			Earnings-weighted Education			Social Position		
	Less educated	Educated		Less educated	Educated		Less educated	Educated	
0-3	−0.37 (0.47)	−0.72+ (0.39)		−0.02 (0.02)	−0.03 (0.02)		−0.07 (0.09)	−0.02 (0.05)	
0-3=1XLess=1			0.64 (0.69)			0.01 (0.02)			0.02 (0.09)
4-6	−0.72+ (0.43)	−0.49 (0.33)		−0.03 (0.02)	−0.02 (0.02)		−0.13 (0.09)	−0.05 (0.05)	
4-6=1XLess=1			0.02 (0.62)			−0.01 (0.02)			−0.03 (0.08)
7-9	−0.50 (0.41)	−0.29 (0.27)		−0.02 (0.02)	−0.01 (0.01)		−0.10 (0.07)	0.01 (0.04)	
7-9=1XLess=1			0.00 (0.52)			−0.01 (0.02)			−0.07 (0.08)
10-12	−0.82* (0.38)	−0.48+ (0.25)		−0.02 (0.02)	−0.01 (0.01)		−0.09 (0.07)	−0.06 (0.04)	
10-12=1XLess=1			−0.19 (0.48)			−0.01 (0.02)			0.00 (0.07)
13-15	−0.89* (0.35)	−0.42* (0.20)		−0.02 (0.02)	−0.02+ (0.01)		−0.09 (0.07)	−0.02 (0.03)	
13-15=1XLess=1			−0.39 (0.45)			−0.00 (0.02)			−0.04 (0.07)
16-18	−0.33 (0.33)	−0.35+ (0.18)		−0.01 (0.01)	−0.01 (0.01)		−0.05 (0.05)	−0.02 (0.03)	
16-18=1XLess=1			0.05 (0.38)			0.00 (0.02)			−0.02 (0.05)
Observations	17494	35108	52602	17494	35108	52602	16534	33982	50516

Standard errors in parentheses, clustered at the family level and bootstrapped using 500 replications. +  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

*Note:* Fixed effects results. See previous tables for the description of the outcomes and the controls.

*Source:* Estimation sample drawn from the Dataset "Formation et Qualification Professionnelle" (INSEE), waves 2003 and 2014. Individuals are born between 1946 and 1988. Siblings who experience a parental separation in the same age group or with an age difference larger than ten years are excluded.



Table A.19 – Heterogeneous divorce effect according to year of birth (Fixed Effect)

	Schooling			Earnings-weighted Education			Social Position		
	Born before 1970	Born after 1970		Born before 1970	Born after 1970		Born before 1970	Born after 1970	
0-3 at divorce	−0.25 (0.49)	−1.40** (0.44)		−0.02 (0.02)	−0.05* (0.02)		−0.05 (0.07)	−0.05 (0.07)	
0-3 at divorce=1XAfter 1970=1			−0.49 (0.47)			−0.01 (0.02)			−0.04 (0.06)
4-6 at divorce	−0.39 (0.39)	−1.14*** (0.33)		−0.02 (0.02)	−0.04* (0.02)		−0.12+ (0.07)	−0.05 (0.06)	
4-6 at divorce=1XAfter 1970=1			−0.28 (0.40)			−0.01 (0.02)			0.03 (0.05)
7-9 at divorce	−0.23 (0.36)	−0.69* (0.30)		−0.02 (0.02)	−0.03+ (0.02)		−0.08 (0.06)	0.03 (0.05)	
7-9 at divorce=1XAfter 1970=1			−0.18 (0.31)			−0.01 (0.01)			0.06 (0.05)
10-12 at divorce	−0.73* (0.35)	−0.66** (0.24)		−0.03+ (0.02)	−0.02 (0.01)		−0.11+ (0.06)	−0.04 (0.04)	
10-12 at divorce=1XAfter 1970=1			0.35 (0.26)			0.01 (0.01)			0.03 (0.04)
13-15 at divorce	−0.81** (0.26)	−0.53* (0.22)		−0.03* (0.02)	−0.02* (0.01)		−0.03 (0.05)	−0.05 (0.04)	
13-15 at divorce=1XAfter 1970=1			0.49+ (0.26)			0.02 (0.01)			−0.02 (0.04)
16-18 at divorce	−0.48 (0.30)	−0.44* (0.20)		−0.02 (0.01)	−0.02* (0.01)		−0.06 (0.05)	−0.01 (0.03)	
16-18 at divorce=1XAfter 1970=1			0.18 (0.25)			0.00 (0.01)			0.02 (0.04)
Constant	16.40*** (0.98)	14.22*** (2.47)	15.21*** (0.80)	0.23*** (0.05)	0.17 (0.11)	0.21*** (0.04)	12.64*** (0.18)	13.09*** (0.35)	12.80*** (0.14)
Observations	36150	16452	52602	36150	16452	52602	34813	15703	50516

Standard errors in parentheses, clustered at the family level and bootstrapped using 500 replications. +  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

*Note:* Fixed effects results. See previous tables for the description of the outcomes and the controls.

*Source:* Estimation sample drawn from the Dataset "Formation et Qualification Professionnelle" (INSEE), waves 2003 and 2014. Individuals are born between 1946 and 1988. Siblings who experience a parental separation in the same age group or with an age difference larger than ten years are excluded.

## A 6 Other Sensitivity Checks

Table A.20 – Effect of a parental separation (without controlling for Mother’s occupation)

	Schooling		Earnings-weighted Education		Social Position	
	Random Effects	Sibling Difference	Random Effects	Sibling Difference	Random Effects	Sibling Difference
0-3 at divorce	−0.92*** (0.13)	−0.45 (0.28)	−0.04*** (0.01)	−0.02 (0.01)	−0.08*** (0.02)	−0.05 (0.04)
4-6 at divorce	−0.88*** (0.11)	−0.54* (0.24)	−0.03*** (0.00)	−0.02* (0.01)	−0.09*** (0.02)	−0.09* (0.04)
7-9 at divorce	−0.60*** (0.10)	−0.32 (0.22)	−0.03*** (0.00)	−0.02+ (0.01)	−0.05*** (0.01)	−0.04 (0.03)
10-12 at divorce	−0.70*** (0.10)	−0.55** (0.19)	−0.02*** (0.00)	−0.01* (0.01)	−0.06*** (0.01)	−0.08** (0.03)
13-15 at divorce	−0.68*** (0.09)	−0.55** (0.17)	−0.02*** (0.00)	−0.02* (0.01)	−0.05*** (0.01)	−0.05* (0.03)
16-18 at divorce	−0.35*** (0.09)	−0.32* (0.16)	−0.01* (0.00)	−0.01 (0.01)	−0.04** (0.01)	−0.04 (0.02)
Ref. Group : 19+ at divorce	0.11 (0.07)		0.00 (0.00)		0.01 (0.01)	
Constant	39.10*** (2.36)	13.76*** (0.60)	1.54*** (0.11)	0.16*** (0.03)	10.87*** (0.37)	12.64*** (0.12)
Observations	56876	56876	56876	56876	54570	54570

Standard errors in parentheses, clustered at the family level and bootstrapped using 500 replications. +  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

*Note:* Schooling is a proxy for the number of years of schooling. Earnings-weighted education is the wage value of the individual’s highest degree (compared to no degree at all). Social position is the average earnings estimated separately for each gender on full-time workers with an Heckman procedure to account for the absence of part-time workers and inactive individuals. See Section A 2 for a more detailed description. Individual characteristics, such as sex, year of birth and its quadratic term, his age and its quadratic term, birth order and a dummy indicating if the individual is the last born of the sibship are all controlled for, as are family background variables, such as parents degree and father’s profession, parents’ country of birth, mother’s year of birth, family size and its quadratic term, and region of birth.

*Source:* Estimation sample drawn from the Dataset "Formation et Qualification Professionnelle" (INSEE), waves 2003 and 2014. Individuals are born between 1946 and 1988. Siblings who experience a parental separation in the same age group are excluded, to avoid identification issues.