European Sociological Review, 2019, 1–15
doi: 10.1093/esr/jcz002
Original Article

OXFORD

Why Parental Unemployment Matters for Children's Educational Attainment: Empirical Evidence from The Netherlands

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Submitted January 2017; revised December 2018; accepted December 2018

Abstract

This study examines the effect of parents' unemployment on their children's subsequent educational attainment. Its theoretical significance lies on its focus to test the mediating role of parents' changing work ethics during spells of unemployment. Integrating multiple survey and administrative data sources, our estimates are based on a sample of Dutch children ($n = 812$) who were exposed to their parents' unemployment during the previous economic crisis in the early 1980s. Our results reveal a direct negative effect between fathers' unemployment duration and their children's educational attainment and also an indirect effect through mothers' changing attitudes towards work. We also find empirical evidence that mothers' and fathers' whose views about work become more pessimistic lead to reduced educational attainment among their children.

Introduction

Since the economic crisis in the first half of the 1980s, millions of children have grown-up with at least one parent unemployed (Brand and Simon Thomas, 2014). Many parents who lost jobs during the early 1980s recession were later re-employed in jobs with less stability and lower quality, authority, and wages (for a review, see Brand, 2015). Given these substantial consequences for workers, children may also experience negative effects of parental unemployment. Yet, despite a relatively high incidence of children living in jobless households (OECD, 2016), evidence about the role of parental unemployment in influencing children's educational attainment remains scant for two reasons. First, the focus of previous research on intergenerational mobility has typically been families with employed fathers. This often led to the omission of families experiencing unemployment because they did not qualify for inclusion (Blau and Duncan, 1967; Blau, 1999; Breen and Jonsson, 2005; Ermisch, Jäntti and Smeeding, 2012). Second, the few studies examining the intergenerational effects of unemployment have mostly focused on father–son or mother–daughter relationships (Oreopoulos, Page and Stevens, 2008; Kalil and Wightman, 2009; Page, Stevens and Lindo, 2009; Coelli, 2011; Brand and Simon Thomas, 2014). Although research has now established that paternal unemployment is negatively associated with children's future achievements, very little is known about the mechanisms underlying this intergenerational relationship.

The present study addresses this knowledge gap by asking how parental unemployment influences children's educational attainment and contributes to existing work in three major ways. First, extant research has mainly focused on short-term and immediate effects of parental unemployment on children's grade retention, school expulsion, or academic progress. Our study moves this scholarship forward by testing whether parental unemployment experienced early in life carries severe and long-term scars for children's educational outcomes, providing further insights about the nature and size of unemployment effects. Second, we include households in which both parents experience unemployment (as opposed to only fathers) and gauge the effects associated with two distinct dimensions of parental unemployment: namely its incidence and cumulative duration. Finally, we test—as few other studies have—how disadvantage is reproduced from one generation to the next through the changing work ethic of the parent. These extensions lead to a better understanding of why parental unemployment matters for children's educational attainment. We study this intergenerational transmission process in the Netherlands in the aftermath of the early 1980s recession, when many families suffered some level of unemployment. Given similar increases in unemployment following the Global Financial Crisis in the late 2000s, the current analysis has implications for the generation of children who most recently experienced parental unemployment in the wake of that crisis.

We use a multi-data approach that combines the first three waves (1985, 1986, and 1988) of the Dutch Organisatie voor Strategisch Arbeidsmarktonderzoek (OSA) Labour Supply Panel with register data from the Social Statistical Database (SSD) (Linder, van Roon and Bakker, 2011). The OSA panel contains rich information on employment, labour market histories, incomes, demographic characteristics, and attitudes about work from all adult household members. These survey data are linked to administrative data from the SSD to trace these children's educational attainment. The combination of survey and administrative data allows us to engage in an intergenerational analysis that examines how variations in parents' unemployment from 1980 to 1988 influenced the educational attainment of their children ($n = 812$) 20 years later, in 2008.

The Intergenerational Effects of Unemployment: A Theoretical Framework

The Role of Family Resources, Family Stress, and Normative Expectations

Proponents of models of status attainment (Blau and Duncan, 1967) and intergenerational mobility (Becker and Tomes, 1979) have long argued that socioeconomic background (generally measured by parents' incomes, education, and/or occupational status) is a powerful predictor of children's future achievements. The models posit that privileged parents are able to transfer their socioeconomic resources to their children mainly through education, thereby parlaying their initial advantage into further socioeconomic attainment.

Early empirical applications of these theories have been incomplete in that they applied only to families with at least one employed parent (usually the father) and offered no insights with respect to mother–daughter linkages (for a review see Torche, 2015). More recently, the growing body of research on intergenerational effects of unemployment has in part addressed this gap by allowing the inclusion of households with unemployed fathers. Most of this research suggests that paternal job loss in particular reduces children's educational attainment and subsequent earnings by limiting families' capacities to create cognitively stimulating environments conducive to learning (Rege, Telle and Vortruba, 2007; Kalil and Ziol-Guest, 2008; Oreopoulos, Page and Stevens, 2008; Stevens and Schaller, 2011). Research showing how this comes about indicates that children living with parents out of work tend to live in poorer physical conditions at home and are less likely to access the educational goods and services that stimulate skill acquisition and development (Haveman, Wolfe and Spaulding, 1991; Ferreira and Schady, 2009; Kalil and Wightman, 2009), which in turn predicts worse educational outcomes.

Parental unemployment is also associated with parental stress and ineffective parenting behaviour that can worsen family dynamics and negatively affect children's subsequent outcomes. The family stress model (Conger and Elder, 1994), for example, argues that parental job loss puts parents under emotional strain, which increases chances of family discord and marital dissolution, inhibits parental emotional warmth, decreases the quality of family relationships and leads to poor learning environments. This, in turn, can lead to poor behavioural adjustment and low levels of educational attainment in children (see review in Brand, 2015). Thus, we expect parental job loss to be negatively associated with children's educational achievements.

Negative associations are found consistently between paternal unemployment and the academic progress or educational attainment among both sons (Oreopoulos, Page and Stevens, 2008; Stevens and Schaller, 2011) and daughters (Kalil and Ziol-Guest, 2008), which suggests that fathers' unemployment has detrimental effects on children's educational attainment regardless of the

child's gender. Evidence in dual-parent households about the role of mothers' job loss on children's educational outcomes is sparse, but there are a few exceptions. Using data from the US Survey on Income and Program Participation (SIPP), Kalil and Ziol-Guest (2008) investigate the association between parental job loss and their children's grade repetition and expulsion. They find significant negative effects of parental job loss on the probability that children repeat grades and face expulsion. These effects are particularly pronounced in the subset of households in which the mother is the primary breadwinner. Interestingly, in dual-parent households where the father is the primary breadwinner, paternal unemployment produces the largest detrimental effects on children's academic progress. In Norway, Rege, Telle and Vortruba (2007) use a sample of plant closings to investigate the effects of parental job loss on the likelihood of graduating from the 10th grade but find no significant effects for involuntary maternal job loss.

These findings suggest that the negative associations between primary breadwinners' job loss and their children's educational outcomes could be due to income losses attached to parental unemployment. In households where the father is the primary breadwinner, paternal unemployment can result in particularly severe material and social deprivations due to lost income. Thus, societal gender norms that prioritize men's labour market earnings may interact with the resource mechanism to produce gender inequalities. Similarly, normative beliefs about the roles of mothers and fathers in the household may further influence the nature and size of the effects attached to mothers' and/or fathers' job loss. In particular, existing gender norms may influence the degree to which fathers and mothers attenuate the resource deficits caused by their unemployment. For example, in countries with traditional paid work arrangements and strong 'male breadwinner' identities, such as the Netherlands during the 1980s, mothers' unemployment may carry less of a stigma because it fits within Dutch cultural expectations for female labour market participants. Although not directly related to the Dutch context, Ström (2002) found that in jobless households, more traditional gender patterns prevail. This suggests that unemployed mothers may replace some of the time they had spent working in the labour market with productive yet unpaid housework because it is seen as normative for women. Mothers increasing their household work while unemployed could compensate for some of the material and social deprivations associated with their job losses, resulting in weaker negative effects on children's educational outcomes. By contrast, unemployed fathers may avoid additional housework because performing these female-gendered tasks only exacerbates their deviation from the socially normative male role of breadwinner (Brines, 1994; Greenstein, 2000). Therefore, unemployment among fathers may not only lead to more severe income losses but may also challenge fathers' feelings of self-worth and efficacy, resulting in family stress that leads to poorer educational outcomes for children. Taken together, we expect that:

Hypothesis 1: Fathers' unemployment will impact children's educational attainment more severely than mothers' unemployment.

Socialization and the Mediating Role of Work Ethic

Another explanation for why parental unemployment is detrimental for children's outcomes relates to socialization theory (Bandura, 1977). This theory posits that norms and attitudes instilled early in life play a vital role in the transmission of (dis)advantage from parent to child. Parents' education and work experiences shape their children's views about the importance of work and subsequent academic performance (Conger and Elder, 1994; Elder, 1999). Parents act as role models for their children such that parents with high education and earnings encourage similar behaviour in their children (Haveman, Wolfe and Spaulding, 1991; Engbersen *et al.*, 1993). This implies that changing parental attitudes towards work, also referred to as 'work ethic', may constitute an indirect channel through which parental involuntary unemployment influences children's educational outcomes.

While of course having a weaker work ethic may cause an increased likelihood of experiencing unemployment, extant literature also suggests that experiencing unemployment is associated with subsequent changes in personality traits and attachment to work (Hyggen, 2007; Daly and Delaney, 2013; Boyce *et al.*, 2015). Attitudes towards work have generally been thought to reflect a relatively stable personality trait, which is learned through early socialization and is relatively stable in adults over time (ter Bogt, Raaijmakers and van Wel, 2005; Hyggen, 2007). However, prolonged unemployment seems to provide an exception, with Hyggen (2007) using Norwegian longitudinal data showing that long unemployment spells lead to reduced work commitment.

Scholars have noted that parents' work ethic may change in offsetting ways when they experience unemployment. On one hand, parents and children may internally adapt to a situation without work and accept

the stigma attached to not having a job (Barón, Cobb-Clark and Erkal, 2015). Long-term unemployment is associated with decreased work commitment after controlling for previous levels of work commitment (Hyggen, 2007). Furthermore, previously displaced workers who are re-employed experience losses in job quality, but their levels of job satisfaction do not decrease, suggesting a corresponding decrease in aspirations (Dieckhoff, 2011). This erodes parents' sense of the importance of work and can dampen children's interests in pursuing educational training (Brand and Simon Thomas, 2014). Parental unemployment may also affect children's attachment to work indirectly by exposing them to welfare programmes. Those who receive welfare benefits as children are more likely to receive similar benefits during adulthood in part because they have lower informational costs and they conform to and imitate their parents' behavioural (Gottschalk, 1996; Duncan *et al.*, 1998). These learning and adaptation effects among children may produce less engagement with school and lower educational attainment.

On the other hand, parents' exposure to acute hardship due to unemployment may increase the importance that parents assign to employment (Ferreira and Schady, 2009; Torche, 2010). Parents may therefore encourage children to attain higher levels of education as a strategy to avoid future spells of unemployment, producing an offsetting, positive effect on children's educational attainment. This positive effect is referred to in the literature as the 'substitution-effect' (Ferreira and Schady, 2009; Schafer, Ferraro and Mustillo, 2011).

Overall, based on the preceding discussion, we expect that:

Hypothesis 2: A negative (positive) change in parental work ethic will negatively (positively) affect children's educational attainment.

Data, Measures, and Method

Data

Data on parental unemployment used in our main models comes from the first three waves (i.e. 1985, 1986, and 1988) of the OSA, a nationally representative longitudinal survey of over 2,000 households in the Netherlands. All adults and children, 16 years and older, living in the same household were surveyed on a range of topics, including employment status at the time of interview and detailed retrospective information about labour force status changes between the interview dates. The first wave of respondents was interviewed in 1985 and then re-approached in 1986, with further biennial waves until 2010.

Data on children's educational attainment in 2008 comes from the SSD in the Netherlands (Linder, van Roon and Bakker, 2011), which combines data from eight educational registers since 1995. The SSD registers are used for the funding of educational institutions (from elementary education to university education) and contain information on educational and demographic characteristics of students.

The linking of the parents in the OSA to the children in the SSD involved two steps. In a first step, using parents' birth dates, sex, and address information, we identified 2,225 children whose parents participated in at least one of the three OSA waves (i.e. 1985, 1986, and 1988). Out of these, 1,596 children (72 per cent) were matched to their parents. Parents that migrated, changed addresses, or died before 1995 (and thus before the SSD registers started to collect data) were lost, resulting in 28 per cent of children not being matched to their parents. In a second step, we selected children with a valid (i.e. non-missing) observation score for educational attainment in 2008. Because the SSD register data on education do not cover the entire population of the Netherlands (Linder, van Roon and Bakker, 2011) our final sample is reduced to an effective sample of 812 children (i) who were between 25 years and 37 years in 2008; (ii) who had valid information on their educational attainment in 2008; and (iii) whose parents participated in one of the OSA waves during 1985 and 1988. A lower age limit (of 25 years) was imposed to ensure the children in the sample had the chance to complete their educational career. An upper age limit was also imposed given the influence that parents exert upon their children is expected to decline with time. The choice of 37 years as this upper limit was somewhat arbitrary, but sample size considerations dictated that the age band chosen could not be too narrow. We reweighted our sample such that it is representative of the Dutch population in 2008 with respect to age, sex, marital status, country of origin, and income source (Linder, van Roon and Bakker, 2011). All of our regression estimations are undertaken using this reweighted sample.

Measures

The outcome variable is *children's highest attained education level* in 2008, which originates from the SSD data. Our dependent variable distinguishes between five major categories: (i) primary education, which indicates the completion of elementary school (in the Dutch system, BO); (ii) lower secondary education, which

indicates the completion of lower intermediate secondary level (in the Dutch system, LBO-MAVO-VMBO); (iii) upper secondary education, which indicates the completion of upper intermediate secondary school (in the Dutch system, HAVO-VWO-MBO); (iv) tertiary education first stage, which indicates the completion of a bachelor's degree (in the Dutch system, HBO); and (v) tertiary education second stage, which indicates the completion of a university degree (in the Dutch system, WO).

In the OSA questionnaires, unemployment was defined as 'currently out of labour and searching actively for a job'. Reasons for unemployment were (i) reorganization; (ii) plant/firm closure; (iii) abolition of a position; or (iv) other reasons. In our sample, most of those who experience unemployment self-reported that a reorganization, plant/firm closure, or the abolition of their position was responsible for their unemployment. This suggests that the majority of unemployed workers lost their jobs due to factors largely outside their control. Parental unemployment is measured through two key independent variables. First, *parents' unemployment incidence*, which was constructed using a series of survey questions about parents' labour force status at the time of the interview (1 = if the father/mother ever experienced unemployment in any of the survey waves, 0 = if father/mother were employed or self-employed). Second, *fathers'/mothers' cumulative unemployment duration* was constructed using retrospective information about parents' labour force changes over the period 1980–1988 (1 = spells shorter than 1 year, 2 = spells between 1 year and 2 years, 3 = spells of 3 years and longer, and 0 = no unemployment spells during the observation period). We expect these two dimensions of parental unemployment to exert negative effects on children's educational attainment. We also include a separate control for whether parents experienced periods of *inactivity* during the study period (1 = inactivity, 0 = father/mother were employed or self-employed). This controls for the possibility that children living with parents not seeking employment due to reasons of illness, disability, injury, or other family specific situations may be more likely to perform poorly at school.

A key independent variable of interest is *parents' work ethic*. In 1985 and 1988, respondents were asked how much they agreed with the following statements (i) 'work is a duty towards society' (1 = 'very much agree' to 5 = 'very much disagree'); (ii) 'workers should accomplish their work-specific duties first before engaging in other obligations' (1 = 'very much agree' to 5 = 'very much disagree'); (iii) 'work comes always first even if it restricts leisure time' (1 = 'very much agree' to 5 = 'very much disagree'); and (iv) 'If one wishes to enjoy life then (s)he should be ready to work hard for it' (1 = 'very much agree' to 5 = 'very much disagree'). We recoded the responses such that high scores represented placing high importance on employment. We then averaged these four indicators into a consistent scale for *work ethic*, resulting in values of Cronbach's alpha of 0.71 for 1985 and 0.75 for 1988. In the model, we include the most recent observed value of the work ethic scale, which comes from the 1988 survey unless respondents only answered in 1985.

We also use the 1985 and 1988 values of the work ethic scale to compute our key mediating variables that capture the direction of *change in mother's/father's work ethic*. Respondents who only answered the work ethic questions in either 1985 or 1988 were assumed to have no change in work ethic across waves.[1] For parents who experienced unemployment sometime during the study period with two valid values of the work ethic scale, we create a measure that describes the direction of any changes (increased, no change, or decreased) in the work ethic scale between the 1985 and 1988 waves of the OSA Labour Supply Panel. The reference category across the three dummy variables consists of parents who remained employed during the study period, which according to existing research have been found to have a relatively stable 'work commitment' or 'work ethic' (Cobb-Clark and Schurer, 2012; Boyce *et al.*, 2015).

Next, we include a variable for *parents' educational attainment* that distinguishes between the same five categories as above for children's educational attainment. We deliberately do not control for variables that are likely to be endogenous with parental unemployment such as parental occupation or family income. In so doing, we estimate the total average effects of parental unemployment on children's educational outcomes in 2008 rather than the residual effect that remains after controlling for these other possible pathways. Other control variables include dichotomous measures of: whether the child grew up in a *sole-parent household* (1 = yes, 0 = no); the *presence of siblings* in the household (1 = has at least 1 sibling, 0 = no siblings); and participation in each survey year by the parents, and if the highest attained education of mother/father were missing. Finally, as controls for the demographic characteristics, we include the child's gender and age in 2008, which ranged between 25 years and 37 years.

Methods

Our analyses are based on weighted least squares (WLS) estimates of a model of the link between parental

unemployment and children's highest educational attainment in 2008.[2] This model, in its most expansive form, is specified as:

$$Y_i = \alpha 0 + u_i\beta_u + \Delta we_i\beta_{\Delta we} + x_i\beta_i + \varepsilon \quad (1)$$

where, Y_i represents the educational attainment of child i in 2008, u_i indicates i's parents' unemployment incidence and duration over the period 1980–1988 with β_u indicating their respective coefficients, and Δwe_i indicates the change in i's parents' work ethic over time (i.e. between 1985 and 1988) with $\beta_{\Delta we}$ indicating their respective coefficients. Finally, x_i is a vector controlling for i's parents work ethic, demographic, and family structure variables described in the previous section with β_i denoting their respective coefficients. We also include dummy variables that control for: whether mother/father were (non)respondents; if mothers/fathers participated in survey years 1985, 1986, and 1988; whether mother/father experienced inactivity during the study period; and if parents have missing educational attainment.

We start by estimating a WLS regression model that does not include controls for parents' work ethic or sociodemographic controls (Model 1). Next, two additional WLS specifications were estimated. The first multivariate specification (Model 2) controls for parents' work ethic and a set of sociodemographic covariates, whereas the second (Model 3) adds the block of parents' changing work ethic measures as specified in equation (1). Hypothesis testing regarding the equality of coefficients across maternal and paternal unemployment was performed using Wald tests. All estimates were weighted to reflect differential sample selection probabilities and differential nonresponse. Estimates are also cluster corrected at the household level to adjust for shared variance within sibling groups.

Results

Descriptives

Table 1 reports the mean and standard deviation of selected variables from our analysis. Children's characteristics are reported for 812 children that belong to 588 households, of which 559 are dual-parent and 29 are single-parent. Households have 1.38 children on average. Of the 812 children, 377 children lived with no other sibling during the study period, 291 lived with one sibling, 103 with two siblings and the remaining sample of children lived with three or more siblings. A plurality of children in our sample attained a tertiary education first stage, or a bachelor's degree (41 per cent). The second largest group attained an upper secondary degree (33 per cent) followed by those with a university degree (19 per cent). Men and women were represented roughly

Table 1. Descriptive statistics of (selected) variables: means and SDs

Variables	Mean	SD
Child's highest attained education		
Primary education	0.01	0.11
Lower secondary education	0.06	0.23
Upper secondary education	0.33	0.47
Tertiary education, first stage	0.40	0.49
Tertiary education, second stage	0.19	0.39
Parental unemployment		
Unemployment incidence father	0.08	0.27
Unemployment incidence mother	0.10	0.29
Cumulative unemployment spell father		
<1 year	0.01	0.11
1–2 years	0.01	0.09
3+	0.06	0.26
Cumulative unemployment spell mother		
<1 year	0.02	0.14
1–2 years	0.02	0.13
3+	0.06	0.21
Father's highest attained education		
Primary education	0.05	0.21
Lower secondary education	0.26	0.43
Upper secondary education	0.23	0.42
Tertiary education, first stage	0.18	0.38
Tertiary education, second stage	0.04	0.19
Mother's highest attained education		
Primary education	0.08	0.27
Lower secondary education	0.37	0.48
Upper secondary education	0.26	0.44
Tertiary education, first stage	0.10	0.30
Tertiary education, second stage	0.01	0.10
Parents' work ethic		
Work ethic father	2.32	0.65
Work ethic mother	2.43	0.65
Father's change in work ethic		
No change	0.01	0.16
Negative change	0.05	0.21
Positive change	0.01	0.07
Mother's change in work ethic		
No change	0.03	0.17
Negative change	0.04	0.20
Positive change	0.03	0.18
Family structure		
Presence of siblings	0.54	0.49
Sole-parent household	0.05	0.22
Child's demographic characteristics		
Age	30.6	3.79
Female	0.50	0.50

Note: *N* households = 588; *N* respondents/young adults = 812. SD = standard deviations.

equally in the sample, and the average respondent was 31 years old in 2008.

About 8 per cent of fathers experienced unemployment over the period 1985–1988 with most of these (6 per cent) experiencing cumulative spells that lasted three years or longer using the retrospective reports that include employment information from 1980 and beyond. Among mothers, the incidence of unemployment was slightly higher (10 per cent), though fewer of these (4 per cent) had unemployment spells lasting 3 years or longer. Fathers' most recent work ethic value averaged 2.45, so close to the mid-point of the work ethic scale. Of the fathers who experienced unemployment, most (63 per cent: 0.05/0.08 = 0.625) experienced a decrease, with far fewer (25 per cent: 0.02/0.08 = 0.25) experiencing an increase in their work ethic. Very few fathers (13 per cent: 0.01/0.08 = 0.125) experienced no change in their work ethic. Mothers reported slightly lower than average work ethic values (average of 2.32). Of mothers who experienced unemployment, about 30 per cent (0.03/0.10 = 0.30) experienced an increase, 40 per cent (0.04/0.10 = 0.40) a decrease and 30 per cent (0.03/0.10 = 0.30) did not experience any change during the study period.

WLS Analyses

WLS estimates are presented in Table 2. The first model provides baseline estimates for the effect of parental unemployment on children's educational attainment. Model 1 in Table 2 indicates that paternal ($B = -0.69$; $P < 0.05$) and maternal ($B = -0.49$; $P < 0.05$) unemployment have strong and independent negative effects on their children's educational attainment. The unstandardized coefficients are significantly stronger for fathers' unemployment than for mothers' unemployment ($F = 4.87$; $P < 0.01$), which lends support for hypothesis 1. In this baseline model, parental unemployment duration does not seem to have a negative effect on children's education.

Model 2 controls for parents' work ethic and sociodemographic background. Adding these controls substantially increases the explained variation from 17.4 per cent in Model 1 to 41 per cent in Model 2. Inclusion of these variables reduces the size of the unstandardized coefficients for paternal unemployment but increases its strength ($B = -0.51$; $P < 0.01$). Also, the association between fathers' cumulative unemployment duration and children's educational attainment becomes stronger ($B = -0.12$; $P < 0.05$). This suggests that paternal unemployment has a substantial negative effect on children's educational outcomes such that its experience reduces children's education levels by 0.51 points, while each additional year that fathers are unemployed reduces their children's educational attainment with an additional 0.12 points.[3] By contrast, negative effects associated with mothers' unemployment become lower in size and are no longer significant ($B = -0.32$; $P > 0.05$). The test for equality across maternal and paternal employment unemployment ($F = 6.57$; $P < 0.01$) indicates that paternal unemployment is more detrimental than maternal unemployment, which supports hypothesis 1. There is also a gender difference in the estimated effects of parental work ethic. A higher maternal work ethic is associated with higher educational attainment, but father's work ethic had no significant effect. This result is consistent with prior research findings that children's values are correlated more strongly with mothers' values than fathers' in societies with traditional gender norms, such as the Netherlands of the 1980s (Acock and Bengsten, 1978; Kohn, Slomeznski and Schoenbach, 1986), and reflects the relatively greater time mothers spend with their children. Both father's and mother's levels of education are positively related to children's educational outcomes.

Model 3 tests the mediating role of changing parental work ethic. Including changes in parents' work ethic increases the explained variance by 4 per cent points (from 41 per cent in Model 2 to 45 per cent in Model 3) and absorbs entirely the established effects of paternal unemployment and its cumulative duration. Specifically, Model 3 indicates that a positive change in mother's work ethic between 1985 and 1988 leads to higher educational attainment ($B = 1.41$, $P < 0.001$); conversely, a negative change in mother's work ethic leads to lower educational attainment in 2008 ($B = -1.21$, $P < 0.01$) compared to children whose mothers experienced no change in work ethic during the study period. Results from Wald tests indicate that positive changes in mothers' work ethic differ significantly from the negative changes ($F = 6.03$; $P < 0.01$). We find an independent negative association between decreasing values of work ethic among fathers and their children's educational attainment ($B = -0.48$, $P < 0.05$) and no significant effect for positive changes in father's work ethic. These contrasting effects seem to suggest that the effects of paternal unemployment differ from that of maternal unemployment, with mother's unemployment impacting more severely their views about work and fathers' unemployment impacting more severely their incomes. The effects of other covariates included in Models 3 are similar to those estimated in Model 2 and all move in the expected direction.

Table 2. WLS estimates predicting children's highest attained education level in 2008: selected unstandardized (B) coefficients and robust SEs ($n = 812$)

	Model 1		Model 2		Model 3	
	B	SE	B	SE	B	SE
Parental unemployment						
Unemployment incidence father	−0.69	0.34*	−0.51	0.16**	−0.15	0.19
Unemployment incidence mother	−0.49	0.24*	−0.32	0.18	−0.23	0.21
Cumulative unemployment spell father	−0.12	0.08	−0.12	0.05*	−0.06	0.04
Cumulative unemployment spell mother	0.02	0.07	−0.02	0.05	−0.06	0.05
Fathers' change in work ethic						
Negative change					−0.48	0.21 *
Positive change					0.47	0.43
Mothers' change in work ethic						
Negative change					−1.21	0.42 *
Positive change					1.41	0.40***
Parents' work ethic						
Work ethic mother			0.24	0.09 **	0.20	0.08 **
Work ethic father			−0.05	0.10	−0.03	0.09
Father's highest attained education						
Lower secondary education			0.64	0.18***	0.63	0.18***
Upper secondary education			0.99	0.21***	0.95	0.19***
Tertiary education, first stage			1.20	0.22***	1.10	0.20***
Tertiary education, second stage			1.35	0.26***	1.20	0.26***
Mother's highest attained education						
Lower secondary education			0.16	0.15	0.30	0.15*
Upper secondary education			0.38	0.17 **	0.47	0.17**
Tertiary education, first stage			0.67	0.20 ***	0.73	0.18***
Tertiary education, second stage			1.24	0.31 ***	1.44	0.31***
Family structure						
Presence of siblings			0.21	0.10	0.18	0.10
Sole-parent household			0.37	0.20	0.14	0.24
Children's demographic variables						
Age			−0.00	0.01	−0.00	0.01
Female			0.08	0.09	0.15	0.08
Constant	3.38	0.15***	1.22	0.54*	0.75	0.75
R^2	0.17		0.41		0.45	

Note: The dependent variable is children's highest attained level of education in 2008. Models 2 and 3, also control for (i) whether mother/father were (non)respondents; (ii) mothers/fathers participation in survey years 1985, 1986, and 1988; (iii) whether mother/father experienced inactivity during the study period; and (iv) if highest attained education of mother/father were missing. SE = standard errors.

*$P < 0.05$; **$P < 0.01$; ***$P < 0.001$.

Finally, analyses (not shown here but available upon request) reveal that effects of paternal unemployment are more severe among boys than girls, suggesting that fathers' unemployment is not experienced equally among children.

Overall, results from Model 3 indicate that the association between parental unemployment and their children's educational outcomes is transmitted indirectly through changing norms and views of parents about the importance of work, providing support for hypothesis 2.

Robustness Tests

We perform several tests of the robustness of our findings. First, it could be argued that our results are selective since our sample is restricted to children for whom we have valid education observations. We test for the selective nature of missing values in our outcome variable by employing the Heckman's two-step correction procedure (Heckman, 1978). Using a probit model in the first step, the procedure estimates the probability that children will have a valid education observation based on a series of individual-level characteristics. Estimates from the probit model are used to

calculate the associated Heckman's correction term (i.e. the inverse Mills ratio) which has been identified through two instrumental variables: (i) the unemployment rate at the year of parents' unemployment; and (ii) parents' region of residence during the study period. We expect these variables to influence children's educational attainment indirectly through parents' unemployment experiences. Next, in a second stage, the associated Heckman's correction term is included in the children's educational attainment equation to test for sample selectivity. Table 3 shows the resultant estimates comparing Column 1 (that uses the same specifications as Model 2 of Table 2) with Heckman's correction in Column 2.

The Heckman correction estimates presented in Column 2 indicate that the selectivity correction itself is not significant. This suggests that children who were not selected in our sample due to incompleteness do not differ significantly in their educational outcomes from those included in our sample. The inclusion of the selectivity correction does not change the direction of our previous estimates, and only slightly alters the size of the estimated coefficients. And while their inclusion does come at the cost of a loss of precision, the coefficients on the variables of most interest (father's unemployment incidence and father's cumulative unemployment duration) remain statistically significant.

Second, it could be argued that our main estimates, presented in Model 2 of Table 2 (shown in Column 1 of Table 4), are influenced by the requirement that the sample of children all be aged between 25 years and 37 years in 2008. Recall that this age range was imposed to ensure all (or almost all) children in the sample had completed their highest educational credentials by 2008. We believe this a sensible restriction. Nevertheless, we tested the sensitivity of our results to this restriction by re-estimating this model among children of all ages whose parents had been observed in at least one of the OSA waves during the period 1980–1988. This model thus also includes children who might be still studying in full-time education or those older children who were adults when living with their parent during 1980–1988, and thus involves a much larger sample size ($n = 2{,}716$).

The results of this specification are presented in Column 2 of Table 4, and show that father's unemployment incidence and cumulated unemployment duration, while much smaller in magnitude, remain detrimental factors for children's educational attainment. Maternal unemployment and its cumulated durations continue to be statistically insignificant. Although adding younger and older adult children into our sample increases the sample size, it also increases the life cycle bias in the parent-child relationships (Mazumder, 2005), making this sample selection far from ideal.

It could also be argued that our sample selection has been too narrowly defined in selecting children whose parents were employed only during the observation period 1980–1988. Analyses in Column 3 are confined to children aged between 25 years and 37 years in 2008 whose parents were observed in at least one of the OSA waves during the observation period 1980–2000. Given the improved economic conditions during the 1990s in the Netherlands, this model will include a higher proportion of parents that were laid off for reasons other than plant or firm closures. The sample size increases from 812 to 2,518 because it includes children who no longer live in the same households as their parents. Again, results indicate that fathers' unemployment and their cumulated unemployment duration inflict negative effects on their children's educational attainment, but maternal unemployment has no impact. Despite the larger sample size, parental work ethic was not observed throughout the entire period, which makes it impossible to estimate the mediating role of parental work ethics. We, therefore, believe that our sample restriction is the most sensible for the purpose of this study.

Third, it could be argued that our estimates are biased if missing values on mothers' and/or fathers' changing work ethic can be associated with children's educational outcomes. We address this concern in three different ways. We start by performing a series of χ^2 tests between parents' missing one or both work ethic observations and their children's educational outcomes. Analyses (not shown

Table 3. Comparing models without (Model 1) and with (Model 2) Heckman's correction: selected unstandardized (B) coefficients and robust SEs ($n = 812$)

	Column 1 WLS		Column 2 Heckman	
	B	SE	B	SE
Parental unemployment				
Unemployment incidence father	−0.51	0.16**	−0.56	0.28*
Unemployment incidence mother	−0.32	0.18	−0.36	0.19
Cumulative unemployment spell father	−0.12	0.05*	−0.13	0.05*
Cumulative unemployment spell mother	−0.02	0.05	−0.03	0.06
Inverse Mills ratio			−2.17	6.62
Constant	1.22	0.54*	2.82	4.87
R^2	0.41		0.40	

Note: All models follow the same specification as Model 2 in Table 2. SE = standard errors.
*$P < 0.05$; **$P < 0.01$; ***$P < 0.001$.

Table 4. Comparing models with different sample selection criteria: selected unstandardized (B) coefficients and robust SEs

	Column 1 Children between 25 years old and 37 years old + parents observed during the period 1980–1988 (n = 812)		Column 2 Children of all ages + parents observed during the period 1980–1988 (n = 2,716)		Column 3 Children between 25 years old and 37 years old + parents observed during the period 1980–2000 (n = 2,518)	
	B	SE	B	SE	B	SE
Parental unemployment						
Unemployment incidence father	−0.51	0.16**	−0.33	0.13**	−0.59	0.16***
Unemployment incidence mother	−0.32	0.18	0.01	0.17	−0.34	0.27
Cumulative unemployment spell father	−0.12	0.05*	−0.07	0.03*	−0.08	0.04*
Cumulative unemployment spell mother	−0.02	0.05	−0.06	0.03	0.04	0.05
Constant	1.22	0.54*	0.08	0.31	2.24	0.53***
R^2	0.41		0.36		0.15	
N households	588		1,571		1,759	

Note: All models follow the same specification as Model 2 in Table 2, but follow different selection rules. SE = standard errors.
*$P < 0.05$; **$P < 0.01$; ***$P < 0.001$.

here but available upon request), indicate no significant relationships between parents' incomplete work ethic observations and their children's educational outcomes.

Next, in Table 5, we re-estimate Model 3 of Table 2 among a more restrictive sample that excludes either mothers or fathers with incomplete work ethic observations in Column 2. In addition, Column 2 excludes either mothers or fathers with one valid work ethic observation. Consequently, the sample sizes in both Column 1 and 2 decrease. As with the results reported earlier in Model 3 of Table 2, when the sample excluded mothers or fathers with incomplete observations for work ethic, we continue to find significant effects for mothers' changing work ethics on their children's educational outcomes. Hence, our findings and conclusions do not change.[4]

However, more restrictive sample selections are not ideal and come at the cost of additional sample selection biases. We therefore re-estimated Model 3 (of Table 2) based on a set of imputed data where parents' missing values for work ethic, either in 1985 or 1988, were replaced using a randomized-based multiple imputation technique in Stata.[5] According to the literature, the number of imputed datasets should be at least five to obtain valid inferences (Rubin, 1987), but a higher number of imputed datasets is recommended to increase the precision and lower the sampling error. We re-estimated Model 3 of Table 2 on two different imputed datasets that replaced parents' missing work ethic values based on randomized values from 5 and 20 imputed datasets respectively. As with the results reported earlier in Model 3 of Table 2, results from these multiple imputed datasets (not shown here but available upon request) indicate that fathers' negative change in work ethic has a negative impact on children's educational outcomes ($B = -0.50$, $P > 0.05$ and $B = -0.53$, $P < 0.05$ for $m = 5$ and $m = 20$, respectively). Among mothers, results from the imputed datasets show a slight increase in the size and significance of the negative changes in work ethic on children's educational outcomes ($B = -1.36$, $P < 0.01$ and $B = -1.37$, $P < 0.001$ for $m = 5$ and $m = 20$, respectively). In contrast, the size and significance of positive changes in work ethic decrease slightly ($B = 1.26$, $P < 0.01$ and $B = 1.28$, $P < 0.01$ for $m = 5$ and $m = 20$, respectively). Despite the slight increase and decrease in the estimated coefficients, our previous findings and conclusions about the mediating effects of changing work ethic are warranted. Overall, these tests indicate that our findings regarding the direct effects of parental unemployment and the indirect effects of changing work ethic are stable and robust against sample selectivity and incomplete observations with slight variations across different sub-samples and sample selection criteria. However,

Table 5. Adding restrictive thresholds to parents' work ethic: selected unstandardized (B) coefficients and robust SEs

	Column 1 Excluding mothers or fathers with *no* valid observations for work ethic ($n = 759$)		Column 2 Excluding mothers or fathers with *one* valid observation for work ethic ($n = 581$)	
	B	SE	B	SE
Parental unemployment				
Unemployment incidence father	−0.10	0.25	−0.04	0.20
Unemployment incidence mother	−0.28	0.22	−0.36	0.23
Cumulative unemployment spell father	−0.05	0.05	−0.05	0.04
Cumulative unemployment spell mother	−0.06	0.05	−0.06	0.05
Fathers' change in work ethic				
Negative change	−0.78	0.31*	−0.70	0.22**
Positive change	0.49	0.54	0.27	0.44
Mothers' change in work ethic				
Negative change	−1.20	0.44**	−1.00	0.41*
Positive change	1.44	0.42***	1.54	0.30***
Parents' work ethic				
Work ethic mother	0.20	0.08*	0.27	0.09**
Work ethic father	−0.01	0.10	−0.18	0.09*
Constant	0.48	0.81	0.55	0.74
R^2	0.45		0.54	

Note: All models use the same specifications as in Model 3 of Table 2, but add restrictive thresholds with regard to parents' work ethic. SE = standard errors. $^*P < 0.05$; $^{**}P < 0.01$; $^{***}P < 0.001$.

despite the different robust tests, unobserved heterogeneity cannot be completely ruled out as a possible explanation.

Discussion

The aim of this study was to examine how parental unemployment experienced in early life shapes children's educational attainment 20 years later using OSA panel survey data and SSD administrative register data. We drew on literature from sociology and economics on the intergenerational transmission of advantage to develop and test two key hypotheses in the Netherlands during the aftermath of the economic crisis that occurred during the early 1980s. This context provides an important corollary to the plight of contemporary children who have experienced parental job loss due to the Great Recession. In testing the association between parental unemployment and children's educational outcomes, we gauged the mediating role of parents' changing views about work during the period in which they lost their jobs.

Using a series of weighted least squares regression models, we find that paternal unemployment and its cumulative duration have enduring negative effects on children's educational attainment long after fathers lose their jobs. We think that the negative effects associated with paternal unemployment reflect the decline in family incomes and the material and social deprivation coupled with fathers' unemployment, which in turn leads to poor learning environments and worse educational outcomes for the children. This finding replicates those found earlier in the U.S. (Kalil and Ziol-Guest, 2008; Page, Stevens and Lindo, 2009; Stevens and Schaller, 2011), Canada (Oreopoulos, Page and Stevens, 2008) and Norway (Rege, Telle and Vortruba, 2007). We find no significant effects associated with maternal unemployment after controlling for socioeconomic background and work ethic. It could be that unemployed mothers pour additional time into housework and increase their time investment in childcare which enhances children's wellbeing and social and intellectual development, which ameliorates any negative effect of maternal unemployment on the educational attainment of their children. Previous work suggests that children benefit from both mothers' and fathers' involvement in the household (Biddulph, 1988; Yeung, Hill and Duncan, 2000; Doucet, 2004; Lamb, 2008; Pleck, 2010) and it could be that in jobless households in which both mothers and fathers put more effort into household work, parental unemployment will carry less of a negative effect on children's educational attainment than in households where unemployed parents are not engaged in household work. That said, it should be noted that, while statistically insignificant, maternal unemployment is negatively associated with children's educational

attainment and the estimated magnitude of this association is not trivial.

Arguably our most important finding is that unemployed mothers that adjust their views about work upwardly influence their children's educational outcomes more positively. We also find empirical evidence that mothers and fathers whose views about work become more pessimistic lead to reduced educational attainment among their children. It could be that unemployed mothers maintaining beliefs about the importance of employment helps reduce family stress and discord and provides stability and parental control that encourages children to do well at school. Our findings about the mediating role of changing work ethic provide empirical support for Elder's conceptual framework (1999). Based on interviews with a sample of children who lived in deprived families during the Great Depression in Oakland, California, Elder's (1999) study reveals that severe economic loss increased mother's centrality as a decision maker and emotional resource while decreasing father's social prestige, and emotional significance. These children later developed attitudes that placed great importance on responsibility and achievement. While the early 1980s recession that we study was not nearly as severe as the Great Depression, the similarities in circumstances and findings between the two recessions suggest children's behavioural adjustments during times of economic stress are more likely influenced by the emotional functioning and normative views of mothers than of fathers, which may also hold true for children who experienced the 2008 Global Financial Crisis. We also note that the overall level of maternal work ethic is positively associated with children's educational attainment, but that paternal work ethic shows no effect. This is distinct from the change in work ethic over time, which is discussed above. The difference in effect by parent gender, along with the larger coefficients for mother's work ethic changes as well, may cautiously suggest that normative mechanisms flow more strongly through mothers than fathers, perhaps because they on average spend more time with children (Bianchi, 2000; Craig, 2006).

Our findings also have important implications for public policy. We show that paternal unemployment hampers children's educational development and outcomes. Further, these negative effects are strong when parents, particularly mothers, become discouraged and detached from labour markets. This means that policies that promote equal distribution of resources and foster positive views about work can be more effective in combating the negative effects of unemployment. Policymakers should encourage and expand strategies that increase parents' involvement in the labour market, as well as activities that promote the normative aspects and importance of work.

Broader information on children's own work ethic and educational aspirations at the time of parents' unemployment, together with a longer observation window with respect to parents' work ethic, especially prior to 1985, would have enriched insights about causality processes and strengthened our findings. Our combination of panel survey data from the OSA and administrative SSD data has yielded a useful dataset, though one potential limitation is that we know little about children's experiences in the intervening 20 years between the two data sources. Of course, experiences and events during childhood, adolescence and early adulthood may be important for understanding why and how parental unemployment affects children's ultimate educational attainment. These unobserved factors, which may include among other things early academic performance and subsequent experiences of parental unemployment or income losses, should ideally be explored in concert with the factors we include in this analysis. Future research that replicates our results in other contexts or that tests alternate explanations would also add to the study of the intergenerational effects of parental unemployment. Finally, our finding of stronger effects of unemployment among fathers and of changing work ethic of mothers should be explored more directly in the future. While we hypothesize these differences may exist due to gendered labour market returns, gendered division of household labour, and normative gender roles around work, future research that directly explores how these factors end up affecting children would add to our understanding of intergenerational transmission processes.

Notes

1 By making this assumption we might have under (or over) estimated parents' changing work ethic on children's educational attainment if a negative (or positive) change was experienced. This issue of under/over-estimation should be less problematic among employed parents with a single work ethic observation if we draw on empirical evidence from various studies (Cobb-Clark and Schurer, 2012; Boyce *et al.*, 2015) that suggest that under stable employment circumstances work ethic remain quite stable over time. Specifically, significant patterns of change are found among unemployed men and women in the mean levels of their agreeableness, openness, and conscientiousness (which is highly correlated with one's levels of work ethic). In

contrast, individuals in continuous employment, experience limited change.

2 In addition to the WLS, we have estimated all our models using weighted ordered probit models. These are presented in Table A1 of Appendix A. The direction and significance of the coefficients from the weighted ordered probit models are highly similar to those presented in this study using WLS. For reasons related to simplicity of interpretations in this study, we interpret coefficients from the WLS in this study.

3 This trend is due to the improved predictive capacity of our model, such that the amount of variation in children's educational outcomes is better captured in the relationship between parental unemployment and parents' work ethic.

4 We also undertook a sensitivity analysis that excluded small changes (<0.50) in parents' work ethic. Results from this analysis (available upon request) show slightly larger coefficient estimates for fathers' negative changes in work ethic and mothers' negative/positive changes. Overall, these findings add further weight to our conclusion that our presented results may have underestimated the mediating effects of parental work ethic.

5 More about this procedure in Stata can be found in Stata (2017) and Mooi, Sarstedt and Mooi-Reci (2018).

Acknowledgements

Various versions of this paper were presented at the 2015 Population Association of America (PAA), the 108th Annual Meeting of the American Sociological Association and the 2012 ECSR/Equalsoc Conference, Stockholm. The authors would like to thank the participants. Finally, the authors thank anonymous reviewers for their suggestions and feedback on earlier drafts of this manuscript.

Funding

This study was supported by funding from the Australian Research Council [DP160101063].

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Appendix A

Table A1. Weighted probit estimates predicting children's highest attained education level in 2008: selected unstandardized (B) coefficients and robust SEs from $n = 812$

	Model 1		Model 2		Model 3	
	B	SE	B	SE	B	SE
Parental unemployment						
Unemployment incidence father	−0.85	0.39*	−0.75	0.26**	−0.21	0.30
Unemployment incidence mother	−0.60	0.33*	−0.48	0.25	−0.40	0.32
Cumulative unemployment spell father	−0.15	0.30	−0.18	0.07*	−0.09	0.06
Cumulative unemployment spell mother	0.02	0.22	−0.02	0.07	−0.08	0.07
Fathers' change in work ethic						
Negative change					−0.78	0.33 *
Positive change					0.81	0.64
Mothers' change in work ethic						
Negative change					−2.08	0.88*
Positive change					2.41	0.88**
Parents' work ethic						
Work ethic mother			0.36	0.13 **	0.31	0.12*
Work ethic father			−0.08	0.14	−0.05	0.14
Father's highest attained education						
Lower secondary education			0.97	0.30***	1.02	0.30***
Upper secondary education			1.51	0.32***	1.53	0.32***
Tertiary education, first stage			1.78	0.32***	1.73	0.31***
Tertiary education, second stage			2.00	0.39***	1.87	0.42***
Mother's highest attained education						
Lower secondary education			0.26	0.24	0.48	0.23*
Upper secondary education			0.56	0.25*	0.71	0.27**
Tertiary education, first stage			1.00	0.28***	1.15	0.28***
Tertiary education, second stage			1.83	0.47***	2.12	0.51***
Family structure						
Presence of siblings			0.31	0.14 *	0.28	0.18
Sole-parent household			0.55	0.28	0.25	0.36
Children's demographic variables						
Age			−0.00	0.01	−0.00	0.02
Female			0.11	0.13	0.20	0.12
Pseudo R^2	0.07		0.20		0.23	

Note: The dependent variable is children's highest attained level of education in 2008. Models 2 and 3, also control for (i) whether mother/father were (non)respondents; (ii) mothers/fathers participation in survey years 1985, 1986, and 1988; (iii) whether mother/father experienced inactivity during the study period; and (iv) if highest attained education of mother/father were missing. SE = standard errors.

*$P < 0.05$; **$P < 0.01$; ***$P < 0.001$.