1. INTRODUCTION

The question of how parents' socioeconomic resources influence their children's education and labor market success has a long tradition in social science research (Blau and Duncan 1967; Bekker and Tomes 1986; Erikson and Goldthorpe 2002). Consequently, a considerable body of literature has established that adversity in children's early life produces unfavorable educational outcomes and poor labor market engagement in later life (Willson et al. 2007; Schafer et al. 2011; Haveman et al. 1991). For instance, we now know that a family's ability to make educational investments, the stability in the parents' relationship and the living and learning conditions in which children grow up are indicators that make or break children's educational achievements (De Graaf et al. 2000; Breen and Jonsson 2005). We also know that family's socioeconomic and cultural resources are key in the formation of their children's future (Schaffer et al 2011; Hayward and Groman 2004).

Missing from extant research, however, is explicit attention to how a temporal unfavorable event in the life of the parent – such as parent unemployment – becomes the seedbed for adverse educational achievements in their children's later life. Empirical evidence on this topic has remained both skewed and scant. Skewed, because the singular focus of previous research on families where both parents are employed has mostly led to the omission of families hit by unemployment from these analyses (Blau & Duncan 1967; Blau 1999; Solon 1999). Scant, because studies that have focused on the socioeconomic implications of unemployment have been limited to individuals experiencing unemployment themselves and less on their families (Arulampalam et al. 2000; Gangl 2003; Gregory & Jukes 2004). As several recent studies have shown, socioeconomic change that comes with unemployment is not limited to one's career but may well extend to that of their children (Baron et al. 2008; Oreopoulus et al. 2008; Page et al. 2007; Kalil and Wightman 2009; Torche 2010). In particular, children with unemployed parents are not only exposed to

relatively greater levels of income-poverty during their key developmental years, but are at greater risk of following in the footsteps of their parents by experiencing joblessness themselves and becoming dependent on welfare in later life (Duncan et al. 1998; Corcoran 1995). Notwithstanding the knowledge gains, we still fail to understand how parent unemployment shapes their children's educational development and attainment in the future. Empirical evidence that examines this relationship is substantively important because it provokes the question of whether it is the *average* or the *change* in the family's socioeconomic resources – triggered by unemployment – that influences children's future socioeconomic mobility.

In addition, relatively little attention has been devoted to map the mechanisms underlying the unemployed parent-offspring relationship. A prevailing assumption from the culture of poverty is that growing up in families that rely heavily on welfare assistance changes children's preferences and educational success by weakening parents and children's work ethics (Lewis 1961; Mead 1992; Murray 1984; Engbersen et al. 1993). While there is some evidence that views and attitudes about work can be transmitted from parents to children (Baron et al. 2008; Corcoran 1995) it is less clear whether this process works similarly among unemployed families. Can children's educational achievements be shaped by socialization within their families; and if so, are mothers' and fathers' changing views about work equally important for their children's educational achievement in later life?

In this study we address both of these literature gaps with the objective to extend recent approaches on the intergenerational mobility across families hit by unemployment (Oreopoulus et al. 2008; Kalil and Wightman 2009; Hempel et al. 2012; Torche 2010; Fallon and Lucas 2002). In doing so, we offer two major advances. First, we investigate whether it is the *average* or the *variation* in the occurrence and duration of mothers' and fathers' involuntary unemployment that influences children's educational attainment in later life.

Substantively, this is important to understand the driving factors behind educational stratification (Torche 2010). By focusing on children who experienced parent unemployment at different ages we advance our understanding of *when* parental unemployment scars children's educational outcomes the most. Second, we focus on parents' (changing) work ethics – e.g., the importance that mothers and fathers assign to work – to understand the process underlying the unemployed parent-offspring relationship. This hypothesized mechanism, is significant because it involves a normative effect that mediates a socioeconomic effect on offspring outcomes.

We use a multi-data approach that combines the first three waves of the Dutch OSA-Labor Supply Panel (1985, 1986, and 1988) with register data from the Social Statistical Database (SSD) (Linder et al. 2011). Specifically, the Dutch OSA survey data contains rich information on employment, labor market histories, incomes, demographic characteristics and attitudes about work of all adult members (aged 16 years or over) in the household. These survey data are linked to eleven years of administrative education data for these families to trace their children's educational achievement. The combination of survey and administrative data allowed us to engage in an intergenerational analysis that examines how variations in parents' (involuntary) unemployment, during 1980 to 1988, influence the subsequent educational attainment of their children ($n = 812$) twenty years later, in 2008.

The study of the parent-offspring relationship in the Netherlands is of substantive interest because while volatilities in parents' employment status have increased similarly to other Western European countries, the degree of institutional protection with regard to the level and duration of unemployment benefits has been largely reduced since the mid 1980s (Mooi-Reci 2012; Mooi-Reci and Mills 2012). This allows us to analyze new and contrasting trends in the intergenerational relationships under changing socioeconomic and institutional circumstances that have not been explored in this way before.

2. THE INTERGENERATIONAL EFFECTS OF UNEMPLOYMENT: A THEORETICAL FRAMEWORK

2.1 Socioeconomic Explanations

The intergenerational implications of unemployment beg the question as to why does growing up in a family with unemployed parent's hurts children's later socioeconomic mobility? Two prominent theories serve as a guide to answering this question. A first *resource-specific* explanation, originating from social mobility theories, suggests that parents' resources are essential for the later educational achievements of their children (Blau and Duncan 1967; Bourideu and Passeron 1977; Becker and Tomes 1986). These involve economic (i.e., incomes, investments), cultural (language skills, norms and values, lifestyle) and social (i.e., contacts, networks and time) resources of the parents. The idea is that parents with more privileged positions are able to transfer their socio-economic resources and contacts to their children and thereby parlay their advantage into further intergenerational advantage. This idea has been well documented with studies showing a positive association between the status of family of origin – measured by father's education, occupation and incomes – and the status attained in education, occupation and incomes by offspring during their life course (Becker and Tomes 1979; Blau and Duncan 1967).

In the context of unemployment, family's diminishing socioeconomic resources from unemployment translate into poor learning environment (i.e., poor physical conditions at home, lack of interaction between the parent and child) and underinvestment, which consequently reduce children's educational achievements (Haveman et al. 1991; Ferreira and Schady 2009; Kalil 2009). Because parents' interactions with the labor market get lost, there is less scope to provide their children with the network and contacts that have influence in the market (Duncan et al 1988). In situations where parents finance their children's education

directly, an unexpected decline in a family's income may even force families to withdraw their children from higher education and engage them in labor market activity as part of a coping strategy (Ferreira and Schady 2009; Torche 2010:89). This association is stronger during economic downturns (Thomas et al. 2004; Rucci 2004) and more evident among the poor (Kane 2001).

Research in poverty studies has shown that the length of poverty exposure determines the degree of failure in a child's later educational life (Corcoran 1995). In the context of unemployment, the duration of parent unemployment can exert a similar direct negative effect on children's educational achievements due to increased parental conflict about financial matters (Conger and Elder 1994), disengaged behavior (McLoyd 1998), ineffective parenting practices (Cummings and Keller 2007) and an increased risk of divorce (Charles and Stephens 2004; Rege, Telle and Votruba 2007). This means that the initial socioeconomic shock inflicted by a single unemployment, can compromise children's educational achievements in the future. Above and beyond this, socioeconomic fluctuations due to repeated and longer spans of parent unemployment form the seedbed for long-lasting adverse educational achievements in the future.

2.2 Cultural Explanations

A second *behavioral-specific* explanation, originating from socialization theories, suggests that parents' education and work experiences shape their children's views about the importance of work and subsequent academic performance (Mead 1992; Murray 1984; Bandura 1977). Parents act as role models for their children such that parents with high education and positions encourage a similar behavior in their children (Haveman et al. 1991). The extent to which unemployment of the parent influences the educational outcomes of their children can take place in different indirect ways. For instance, literature from culture of

poverty shows that unemployed parents can influence their children's views about work by reducing the stigma associated with being unemployed and with collecting unemployment benefits (Lewis 1961; Mead 1992; Murray 1984). Regardless the fact of involuntary unemployment, children are likely to manifest an increased interest in receiving unemployment benefits in later life simply because they try to imitate the behavior of their parents in their pre-adult life (Beaulieu et al. 2004). Research from welfare studies has shown that the longer and more intensive the use of social assistance the less reluctant children are to rely on a similar program in later life (Beaulieu et al. 2004; Gottschalk 1996). This so-called "conformity effect" suggests that unemployed parents who receive unemployment benefits over longer periods can change their children's educational preferences and school engagement.

Second, economic studies suggest that children from families that rely on welfare assistance have lower participation costs about the use and practice of social assistance and thereby use welfare more frequently in the future (Duncan et al.1998; Moffit 1992; Gottschalk 1996). Similarly, children from parents who receive unemployment benefits may learn how to use the benefit system in the future. This so called "learning effect" thus decreases the informational participation costs of offspring and influences negatively children's educational achievements. Finally, it is plausible that when unemployment spans over longer periods parents will adapt to the new labor force situation by searching for (new) friends who share similar characteristics in demographics and labor force status. This "habituation effect" may lead to changing views and attitudes about the importance of work and can be transmitted to their children. Overall, work ethics constitute an important mediating mechanism through which parents can influence their children's educational achievements. Children can learn, conform and adopt adverse views about the importance of work, which can lead to a disengaged behavior at school and poor educational achievement in later life.

2.3 The Timing of Parents' Unemployment and Children's Educational Achievements

From the perspective of cumulative disadvantage, trigger events such as parent unemployment paves an adverse path of career progress in the children's future (Dannefer 2003; DiPrete and Eirich 2006; Schafer et al. 2011). The way in which parent adversity is understood and interpreted by the children defines the way they respond to negative early life events. This makes that parent unemployment can be experienced as more adverse and persistent for some children, while less critical and short-lived for others. For younger children (who follow the attitudes and behavior of their parents without questioning) parent unemployment will be associated with poorer preschool abilities (Haveman et al. 1991; Duncan et al. 1998). This manifests itself into lower test scores and school disengagement among younger children, which sets the stage for a downward spiral of subsequent educational achievements (Duncan et al. 1998; Elder 1999). Especially when parents' unemployment spans over longer periods, younger children are more likely to develop health problems that eventually negatively affect the educational outcomes in their later lives (Elder 1999; Duncan and Brooks-Gunn 1997).

Similarly, studies on older age cohorts show a weaker effect on the educational attainment of the children (Haveman et al. 1991; Duncan et al. 1998). Some have argued that as children enter adolescence they either adopt the values and behavior of their parents or resist and detach from them when they grow older (Bandura 1986; Beaulieu et al. 2004). This means that in the context of parent unemployment the direction of the effect among older children will be ambiguous due to two potential offsetting behavioral effects. First, older children may use parent unemployment and the hardship that goes with it as a lesson to avoid future spells of unemployment. In this respect attaining a higher education is perceived as a strategy to avoid future spells of unemployment and may inflict a positive behavioral effect on older children's educational attainment. On the other hand, older children may internally adapt to a situation without work and accept the stigma that is attached to not having a job in

the future. This will consequently lower their educational aspirations and school engagement and lead to lower educational achievements.

2.4 Does Maternal or Paternal Unemployment Matter the Most?

Finally, different from conventional intergenerational studies that have focused primarily on the father-son relationship, our study portrays and measures the effect of both mothers' and fathers' unemployment. Similarly to other Western European countries and the United States, the increasing female labor participation has been one of the most important socioeconomic changes in the Dutch labor force since the mid 1980s. The involvement of more women in the labor force has changed the landscape of fathers' role as the sole working role model in the family and one should expect that fathers' and mothers' unemployment produce similar negative effects on the educational achievements of their children. Recent studies, however, show that fathers' unemployment produces the largest detrimental effects on their children's education (Kalil and Ziol-Guest 2008). This finding has been related to cultural and behavioral components. Namely, if mothers experience unemployment they are able to minimize marital conflicts by taking care of the household and by devoting time to their children. In addition, women's fragmented employment careers fit within the cultural expectations and understandings about the patterns of labor force participation among Dutch women, which create less of a normative pressure from their peers (Charles and James 2005; Nomaguchi et al. 2005). The contrary applies when fathers experience unemployment. Their deviating careers from "the" standard employment careers may be seen as a failure by their families and/or peers, which may drive marital conflicts that lead to more stress and hardship for their children.

2.5 Summary of Theoretical Predictions

Based on the preceding discussion, we expect parent unemployment to compromise children's educational achievements in the future through the average deprivation of family's socioeconomic resources inflicted by the occurrence and/or duration of unemployment. As parents move in and out unemployment, family resources become volatile and negative conditions around children's educational development get reproduced. The instability constrains families to invest in the education of their children and becomes a driving factor in educational stratification. A complementary mechanism underlying the unemployed parent-offspring relationship is the work ethic of the parent. During pre-adult years, children learn, imitate, and replicate their parents' views and attitudes about work. During periods of unemployment these views can change adversely and impact negatively their educational achievement. The negative influence of parents' unemployment on their children's educational achievement is not experienced similarly across the children. This is expected to be stronger and more adverse among younger children (below 12 years) who learn and imitate their parents' attitudes and behaviors without questioning. This effect is ambiguous among older children who can either oppose or adapt to a situation without work (and thus poor educational attainment) in the future. Hence we expect that:

HYPOTHESIS 1. − *Parent unemployment will have a negative impact on children's educational attainment.*

HYPOTHESIS 2. − *The higher the variation in maternal and paternal unemployment the higher the negative effect on children's educational attainment.*

HYPOTHESIS 3. − *The more positive (negative) the change of mothers' and fathers' work ethics, due to fathers 'and mothers ' occurrence and duration of unemployment, the higher (lower) their children's educational attainment compared to those who did not experience a change in work ethics.*

HYPOTHESIS 4. − *Parent unemployment will have higher negative effects on the educational attainment of younger children then older children.*

HYPOTHESIS 5. − *Fathers' unemployment will impact children's educational attainment more severely than mothers' unemployment.*

3. Data and Method

3.1 Intergenerational Data

In this study we examine how parent unemployment, during children's age 0 to 17, influences the educational attainment of their children twenty years later, in 2008. The focus of our analyses will be on the comparison between parents who experienced unemployment *at least once* during the survey years in 1985, 1986, 1988 and/or retrospectively through the years 1980-1988 and parents who were observed in continuous employment during the same period (1980-1988). Involuntary unemployment is defined in this study as unemployment due to "firm closures/reorganizations" or the "abolition of a position" that are exogenous of a worker's performance.

To test our hypotheses we integrate data from different sources. The data on the parents comes from the first three waves (i.e., 1985, 1986 and 1988) of the Netherlands Labor Supply Panel (OSA). The data were collected from a random sample of households in the Netherlands, with household members aged between 16 and 65. In the first three waves, a total of 2,226 parents were asked to fill in the questionnaire, from which 2,028 were couples, 52 were single fathers and 146 were single mothers. The majority of the parents had a Dutch origin and only a small proportion (about 4 percent) were born in a foreign country. This pattern reflects the low proportion of immigrants during the eighties in the Netherlands (Bevelander and Veenman 2004). Children 16 years and older living in the same household were also asked to participate in the panel survey. The data included detailed information on a respondents' life and labor market history as well as (retrospective) information on the transitions in and out of the labor market, reaching back to January 1980. The detailed labor force information allows us to trace parents' labor force dynamics during the economic recession of the 1980s.

We complement this data with register data from the Social Statistical Database (SSD) in the Netherlands (Linder et al. 2011). This contains information on the educational attainment of children who were between 0 and 17 years old when one of the parents experienced unemployment. To trace the educational attainment of the children we combined eight different educational registers which all covered parts of the population that are relevant for our analyses. These eight educational registers are used for the funding of educational institutions (from elementary education to university education) and include all students and pupils who study in one of these programs. To complete the population for educational attainment, we used information from the Labour Force Surveys (LFS) spanning over 1996-2009. The combination of these data covered the educational attainment of approximately half of the Dutch population (Linder, Van Roon and Bakker 2011). The linking process of these two datasets involved a twofold strategy. First, by using parents' birth dates, sex and address information, we found 2,225 children who were between 0-17 years of age when their parents participated in the OSA panels of 1985, 1986 and 1988. Due to incomplete register records, the parents of only 1,596 children could be identified; implying that at this stage of the linking process only 72% of the children could be linked to their parents. Second, in addition to selecting by age of the children, we selected children with a valid (i.e., non-missing) observation score for educational attainment. This left us with an effective sample of 812 children aged between 25 and 37 years in 2008 whose parents participated in the OSA supply panels between 1985 and 1988. In Appendix B is shown that the resulting 812 children do not differ significantly from the original sample with regard to their educational attainment, unemployment status and work ethics of their parents. Because the records of the children were sample based, we reweighted the records such that information is representative of the population of that year to age, sex, marital status, country of origin, and income source (Linder et al., 2011). Our OLS regression uses these weights when estimating the models.

INSERT FIGURE 1

The lower age limit of 25 years was chosen because by that age, the children will have had the chance to complete their educational career. An upper limit of 37 years of age was chosen, as we assume that the influence that parents exert upon their children will primarily take place in the period during which the children actually live at home. The linking process is described in more details in Appendix B. In Figure 1, we present the timeline indicating the time in which different measures were recorded for the parents and (different age categories of) the children.

3.2 Measures

The dependent variable in this study is the *highest attained education level* of the children in 2008 originating from the Dutch register data (SSD). Our dependent variable distinguishes between five major categories: (1) (pre-) primary education, which indicates the completion of elementary school (in the Dutch system, BO); (2) lower secondary education, which indicates the completion of lower intermediate secondary level (in the Dutch system, LBO-MAVO-VMBO); (3) upper secondary education, which indicates the completion of upper intermediate secondary school (in the Dutch system, HAVO-VWO-MBO); (4) tertiary education first stage, which indicates the completion of a college degree (in the Dutch system, HBO); (5) tertiary education second stage, which indicates the completion of a university degree (in the Dutch system, WO).

Parents' unemployment. Data for parents' labor force status comes from the OSA panel data and is available at three survey periods in 1985, 1986 and 1988. The survey years 1985 and 1986 contain retrospective information about labor force changes that date back to

1980s while the 1988 survey contains retrospective labor force status information covering the period between 1986 and 1988. Parents' unemployment was identified in two different ways. First, we recorded parents' reported labor force status *at* the date of interview so we could identify whether parents were employed or unemployed in a particular year. In the OSA panel, parents' reported labor force status distinguishes between: (1) employed, (2) self-employed, (3) unemployed, (4) non-participating, (5) in military service and (6) in education. Unemployment was explicitly defined in the questionnaires as "currently out of labor and searching actively for a job".

Second, we used parents' retrospective labor market information to trace unemployment spells that emerged *between* two interview dates. To minimize the issue of selection into unemployment, apart from the reported labor force status, we used the reported reasons for labor force status change, distinguishing between 16 reasons: (1) wish a more interesting job; (2) wish more security; (3) wish work with better pay; (4) was offered another job; (5) unemployed due to firm closures/reorganizations; (6) unemployed due to abolition of a position; (7) unemployed for other reasons; (8) unhappy with work climate; (9) change due to personal circumstances; (10) transferred to similar position; (11) transferred to lower position; (12) early retirement; (13) disabled; (14) family situation did not permit; (15) wish higher wages; (16) other reasons. Using this information, we restricted our analyses to parents who were displaced for reasons that we think are exogenous to their work performance, namely displaced due to: "firm closures/reorganizations" or the "abolition of a position" during 1985, 1986 and 1988. This restriction is important to minimize the risk that unemployment may reflect the quality of parents' work performance in the previous job that in turn influences their children's educational aspirations. That is mothers and/or fathers become unemployed because they are not as good of workers as others, or have traits that make them less desirable. These same traits may be linked to the lower educational attainment

of their children thereby confounding the relationship under study. Consequently, we identify

158 mothers and 100 fathers who lost their jobs due to firm closures and/or mergers or

abolition of a position and thus for reasons that are exogenous of their own performance.

Using the above-mentioned information we constructed the following variables. First,

a dummy variable for *father/mother unemployed*: (1) for whether the mother or father

experienced involuntary unemployment at or between the interview dates; and (0) if the

parents were continuously employed. Second, we used the duration that fathers and mothers

spent in unemployment over the period 1980-1988 to construct the accumulated *duration of*

mothers and fathers unemployment over the same period, where: (1) indicates spells shorter

than 1 year; (2) spells between 1 and 2 years; and (3) spells of 3 years and longer. The

reference category of 0 refers to those in continuous employment, thus with no unemployment

spells during the observation period. Using reasons for job loss we constructed a dummy

variable for *job loss due to other reasons* to control for any differences in worker quality that

results from selection for unemployment. As theoretically argued, we expect maternal and

paternal unemployment to be negatively related to children's educational attainment.

Parents' work ethics. To assess attitudes about work (e.g., work ethics) participants were

asked to indicate whether they agree or disagree with the following statements: (1) Work is a

duty towards society; (2) Workers should accomplish their work-specific duties first before

engaging in other obligations; (3) Work comes always first even if it restricts leisure time; (4)

If one wishes to enjoy life than (s)he should be ready to work hard for it. All of these

questions were asked of both fathers and mothers in 1985 and 1988 on a 5-point Likert scale

(from 1 = *very much agree* to 5 = *very much disagree*). We recoded the responses such that

high scores represent a high importance to engage in employment and low scores indicate

otherwise. We then averaged these four indicators into a consistent scale for *work ethics* with reliabilities around 0.73 (range Cronbach's alpha 0.71 for 1985 and 0.75 for 1988).

To model the *change* in mothers' and fathers' work ethics we take the difference between the last and first observed value of work ethics. For unemployed mothers and fathers, the first observed value of work ethics refers to the recorded information *before* the occurrence of unemployment, whereas the last observed value of work ethics may be recorded at the time of unemployment or in the period thereafter. We use this information to create a series of dummy variables that represent unemployed parents' changing work ethics. First, we construct a dummy variable indicating a *positive change in unemployed mothers' work ethics*, where: (1) positive change, and (0) if otherwise. We then construct a dummy for a *negative change in unemployed mothers' work ethics* with: (1) negative change, and (0) if otherwise. And finally we construct a dummy variable for *no change in unemployed mothers' work ethics:* (1) no change, and (0) if otherwise. This latter dummy variable is used as the reference category in our models. For continuously employed mothers, we specify a dummy variable that captures *any change in work ethics* between job changes, with: (1) any change and (0) if otherwise. Likewise, we create the same dummy variables but specifically for fathers, indicating a *positive, negative, no change in unemployed fathers' work ethics or any change among employed fathers.* If the hardship that goes with unemployment increases the importance that parents assign to having a job than a positive change in work ethics should lead to positive educational attainment for their children relative to parents who experience a negative change in their work ethics. We expect positive changes in work ethics of the parents to be positively related to children's educational attainment and otherwise.

Parents' socioeconomic status. To examine the effect of socioeconomic background on children's educational achievement, we constructed three different measures. First, we include

parents' educational attainment at the time of interview in 1985, 1986 and 1988, separately

for fathers and mothers, distinguishing between the following categories: (1) (pre-)primary

education, which indicates the completion of elementary school (in the Dutch system, BO);

(2) lower secondary education, which indicates the completion of lower intermediate

secondary level (in the Dutch system, LBO-MAVO-VMBO); (3) upper secondary education,

which indicates the completion of upper intermediate secondary school (in the Dutch system,

HAVO-VWO-MBO); (4) tertiary education first stage, which indicates the completion of a

college degree (in the Dutch system, HBO); (5) tertiary education second stage, which

indicates the completion of a university degree (in the Dutch system, WO).

Second, we used the retrospective information on fathers' and mothers' occupation at

the time of interview in 1985, 1986 and 1988 to construct the most recent *occupational status*

of the father and *the mother* at the moment of interview, using the International Socio-

Economic Index (ISEI) scale of Ganzeboom et al. (1992). Mothers and fathers who had no

valid occupational status were captured by a dummy variable indicating 1 for no valid

occupational status and 0 if otherwise. Third and finally, to control for the effect of economic

resources we include the categorical variable *net household income*. This variable

distinguishes between the following levels: (1) less than 17,500 Dutch guilders; (2) 17,501 -

20,000 Dutch guilders; (3) 20,001-24,000 Dutch guilders; (4) 24,001-28,000 Dutch guilders;

(5) 28,001-34,000 Dutch guilders; (6) 34,001-43,000 Dutch guilders; (7) 43,001 Dutch

guilders and more[i] (8) missing household incomes.

Family structure. To control for differences in children's educational attainment that may be

related to the family structure several measures were constructed. We distinguish between

three family structures, namely: *families with a step-father*: (1) yes, and (0) otherwise,

families with step-mothers: (1) yes, and (0) otherwise and *families with both parents:* (1) yes,

and (0) otherwise. The different family structures are supposed to capture any potential stress that relates to the complexity of families and negatively affect children's educational attainment. Because the educational attainment of the children may be correlated with the number and presence of other siblings we include the variable *+1 siblings:* (1) more than 1 sibling, and (0) no other siblings. We also identified whether the mother and father *participated in the OSA panel:* (0) no, (1) yes. Finally, to correct for the multiple participation of mothers and fathers who participated in the OSA survey we include three dummies for the *survey years* (i.e., 1985, 1986 and 1988) in which parents participated.

Children's demographic characteristics. To control for differences that relate to children's characteristics we include two demographic variables in our analyses that originate from the population register. These are *age* of children in 2008, ranging between 25 and 37 years, and *gender:* (0) male; (1) female. We also constructed a categorical variable for *age at time of parents' unemployment*: with (1) age between 0-8 years old at time of parents unemployment; (2) age between 9-12 years at time of parents unemployment; and finally (3) age between 13-17 years at time of parents unemployment with 0 those otherwise. As far as demographic variables are concerned, data from the SSD are regarded as of better quality than the same variables obtained from other secondary data sources. A description of the means and standard deviations of these variables can be found in Table A1 of Appendix A.

3.3 Methods

Based on our theoretical argumentations, parents' unemployment occurrence and duration is expected to impose a negative effect on their children's educational attainment because it influences the average level of family's socioeconomic resources. To test this first hypothesis

we use an OLS model that estimates children's highest educational attainment in 2008, E_i ($i=1....n$; $t = 2008$) as a function of a set of independent variables:

$$\hat{E}_{it} = \alpha_0 + \boldsymbol{x'\beta} + \boldsymbol{u}_{pt}{}'\alpha_{pt} + \varepsilon \qquad (1)$$

where, $\boldsymbol{x'}$ is a $K \times 1$ vector of socioeconomic resources of the parents (such as education, occupation level, incomes and family structure) as well as age and gender of the child with their respective $\boldsymbol{\beta}$s in Model 1. The parameter $\boldsymbol{u}_{pt}$ refers to the vector of paternal and maternal occurrence and duration of unemployment over the period 1980-1988 with α_{pt} their respective coefficients.

As Hypothesis 2 suggested, it is the variation in maternal and paternal unemployment that imposes negative effects on children's educational attainment. To capture how changes or fluctuations in parents' unemployment status influence children's educational outcomes in later life we follow the logic used by Hybrid models as presented by Allison (2009). In Hybrid models, both the mean and deviations from the person-specific means are modeled. Specifically, first the means of time-varying variables over time are constructed and then in a second step person-specific means are subtracted from the observed values of each time-varying variable. The advantage of this model is that it estimates the effects of change or variation over time that could not be modeled in Equation (1). In our study, the variable mothers' and fathers' unemployment occurrence is time-varying with parents' observations dating back to 1980s. Following this hybrid logic equation (1) can be rewritten as follows:

$$\hat{E}_{it} = \mathrm{x}'_{1i}\boldsymbol{\beta}_1 + \bar{\boldsymbol{u}}_{pt}\alpha_1 + \left(\boldsymbol{u}_{pt} - \bar{\boldsymbol{u}}_{pt}\right)\alpha_2 + \varepsilon \qquad (2)$$

where, $\mathbf{x}_{1i}$ is a $K_1 \times 1$ vector of socioeconomic characteristics of the parents (such as education, occupation level, incomes and family structure), $\overline{\boldsymbol{u}}_{pt}$ is a $K_2 \times 1$ vector of the parents'-specific means for unemployment occurrence over the period 1980-1988, $(\boldsymbol{u}_{pt} - \overline{\boldsymbol{u}}_{pt})$ is a $K_3 \times 1$ vector of deviations from parents' respective person-specific means. The vector $(\boldsymbol{u}_{pt})$ includes mothers' and fathers' unemployment occurrence over the period 1980-1988 with α_1 denoting the respective effect of parent's unemployment occurrence and α_2 denoting the *effect* of deviations from the mean of time-varying unemployment indicators. The deviation scores will be reported in Model (2).

To test Hypothesis 3, that suggested that parents' unemployment effects are transmitted through parents' changing work ethics we extend Equation (2) with the mean of parents' work ethics and their respective changes in work ethics as constructed earlier distinguishing between: *positive, negative,* or *no change* among mothers and fathers. Finally, to estimate how the relationship between unemployed parent and child varies across children's ages we introduce interaction terms between mothers' and fathers' unemployment indicators and the age at which children experienced parents' unemployment.

4. RESULTS

4.1 Parents' Unemployment and Children's Educational Attainment

Table 1 breaks the effects of parents' unemployment, into an average effect in Model 1 using Equation (1), a variation effect in Model 2 using Equation (2) and an indirect effect in Model 3 which extends Equation (2) with parents' mean and changes of work ethics. Estimates from Model 1 in Table 1 indicate that fathers' and mothers' average unemployment exert strong and negative effects on their children's educational achievement, net of children's age and gender, and parents' socioeconomic resources. The unemployment coefficients – although slightly higher among fathers – seem not significantly different among fathers and mothers.

As expected, Model 1 shows that the duration of fathers' unemployment inflicts negative effects on children's educational achievements. That is, every additional year that fathers spend as unemployed reduces children's educational achievements with 0.13 points in education levels. This effect does not hold for mothers. So far, results lend support to our first hypothesis that parents' unemployment is negatively related to their children's later educational achievement.

To understand whether it is the volatility in parents' employment status that leads to this negative relationship we included both the mean and the deviation of unemployment occurrence for both mothers and fathers into Model 2. It is important to note, that the estimates for the mean unemployment occurrence do not have a substantive meaning in this model but are included to get efficient estimates of the deviation coefficients (see Allison 2009 for a review on this topic). The key finding from Model 2 is that fathers' mean unemployment deviation is highly negative and strongly significant, all else equal. This indicates that fathers' variation in and out employment is the major determinant underlying the unemployed parent and their children's negative educational achievements. That is, the volatility and instability that is induced by fathers' employment status influences negatively children's socioeconomic and cultural resources and thereby leading to poorer educational achievements. This effect is followed by the effect of fathers' unemployment duration, which decreases children's educational achievements by 0.13 points in education levels for each additional year in unemployment. Despite the negative and significant mean unemployment effects among mothers, we find no significant effects for mothers' variation in and out of employment. This key finding therefore offers a partial support for Hypothesis 2 that suggested both mothers and fathers variation in their unemployment situation to lead to poorer educational achievements among children.

INSERT TABLE 2 ABOUT HERE

The effects of other covariates included in Models 1 and 2 move in the expected

direction. For instance, the positive effects of fathers' and mothers' education counterbalance

the negative effects of parents' unemployment such that parents with higher educational levels

have children with higher educational attainment. This result is consistent with findings from

the mobility literature that finds a positive role of education in the parent-offspring

relationship (De Graaf et al. 2000). From the included socioeconomic resources (i.e., the ISEI

status of the parents and household net income) and the indicators of family structure in

Model 2, only mothers' ISEI status appears (weakly) significant. This is likely to reflect the

weak relationship between families' background and children's education attainment that is a

characteristic of the Dutch corporatist model (De Graaf et al. 2000).

4.2 From Parent to Child: Channeling disadvantage

As Hypothesis 3 suggested, a positive/negative change in parents' work ethics, due to their

unemployment occurrence and duration, leads to a positive/negative educational achievement

of their children. To test this hypothesis we extended Equation (2) with the mean of parents'

work ethics and their respective changes in work ethics. Including parents' changing work

ethics substantially increases the explained variance (R^2) in Model 3, which range from 39%

in Model 2 to 48% of the explained variance in children's educational attainment.

Interestingly, the established significant relationship between mothers and fathers mean

unemployment in Model 2 disappears entirely, while the effect of fathers' unemployment

duration as well as fathers' deviation coefficient become smaller and weaker.

As results in Model 3 indicate, mothers' changing work ethics act as a mediating

variable in the parent-child relationship. Specifically, a positive change in mothers' work

ethics leads to higher educational achievement (B = 1.58, $p < 0.01$) of the child, while a negative change leads to lower educational attainment (B = -1.29. $p < 0.01$) compared to the children whose mother experiences no change in work ethics. A similar trend appears among employed mothers and their children, namely: the more positive the change in work ethics, the higher the educational achievement of their children will be (B = 0.54, $p < 0.05$).

These results lend support to our third hypothesis indicating that mothers' changing work ethics is a key-mediating factor in the parent-offspring relationship. They also indicate that there are different pathways through which parent unemployment influences their children's educational outcomes and it would be interesting to map these channels. We reveal these pathways by applying a path analysis, which consist of five multiple regression models distinguishing between five different dependent variables that follow the logic of Equation (1). The advantage of this method is that it decomposes the parent-child relationships into direct and indirect effects, while testing for the causal direction, strength and size of the relationships. Model (1) estimates the direct effect of parents' unemployment on children's educational achievement controlling for parents' socioeconomic resources, family structure and children's characteristics. At this stage, we do not control for parents' work ethics. Model (2) estimates the direct effect of parents' unemployment on fathers' work ethics, controlling for mothers' work ethics, parents' socioeconomic resources, family structure, and children's characteristics. Model (3) estimates the direct effect of parents' unemployment on mothers' work ethics, controlling for fathers' work ethics, parents' socioeconomic resources, family structure, and children's characteristics. Model (4) estimates the direct effect of fathers' work ethics on children's educational achievements, controlling for parents' socioeconomic resources, family structure, and children's characteristics. Finally, Model (5) estimates the direct effect of mothers' work ethics on children's educational achievement, all else equal. The main results from our path analysis are presented in Figure 2.

Figure 2 provides us with two key findings. First, the negative effects of fathers'
unemployment are largely transmitted through their wives/mothers to their children.
Interestingly, it is fathers' unemployment, and in particular, their duration that influences
negatively the work ethics of the mothers. Specifically, the longer the unemployment duration
of the father, the more negatively mothers' views towards work become. This suggests an
increasing discouraged work attitude among mothers when their partner becomes
unemployed. Second, among the different pathways, two channels are key in the transmission
process between fathers and their offspring. The first and most significant pathway – between
fathers' unemployment duration and their children's educational attainment – runs through the
changing work ethics of the mother. Here, the indirect effect accounts for a quarter of the total
effect with –0.059 points (= –0.243*0.244) with the direct effect equaling –0.167 points. This
means that, on average, each additional year that fathers spend in unemployment deteriorates
children's educational achievements with –0.226 points [= (–0.059) + (–0.167)], net of
children's age, gender, family's socioeconomic position and family structure.

The second pathway – between *fathers' unemployment* and their children's education
– runs through fathers' own changing work ethics. The indirect effect of this pathway is –
0.052 points (= –0.183*0.287) with a direct effect of –0.210 points. This means that
controlling for fathers' changing work ethics as well as for other covariates, children's
educational attainment decreases with –0.262 points [= (–0.052) + (–0.210)] from fathers'
unemployment occurrence. These results offer ample support for Hypothesis 3 and suggest
that at least in the Netherlands in 1980s, the father-offspring relationship is contingent upon
mother's ability to cope with her husband's unemployment. The large effect of fathers'

unemployment on mothers' work ethic (-0.243) underscores the traditional division of gender roles in the Netherlands during the 1980s with the role of men and fathers as the breadwinner.

4.3 Parent Unemployment across Children's Ages

Our theoretical predictions in Hypothesis 4 suggested that parent unemployment inflicts different effects on their children. Specifically, unemployment effects were expected more negative among younger then older children. To examine evidence for the fourth hypothesis, Table 2 presents three models that include a series of interaction terms between parent unemployment and children's ages at time of parent unemployment. Results from Model 1 to 3 in Table 2 indicate that parents' unemployment occurrence has large negative effects on the educational attainment among younger children (between 0-8 years) compared to other age groups. In addition, we find that fathers' unemployment duration inflicts particular large negative effects on the educational attainment of children who were between 9-12 years at the time of their unemployment. As expected, older children (between 13-17 years) are least affected; with mothers' unemployment duration positively associated with their educational attainment. These results support our theoretical expectations in Hypothesis 4 and show that older children use parent unemployment as a lesson to work harder and achieve higher educational levels that avoid future spells of unemployment.

INSERT TABLE 2 HERE

We also conducted separate analyses for the different age cohorts including all the control variables and parents' work ethics at the time of interview for each age category. Results not shown here but available upon request indicate that the impact of mothers' work ethics on their children's educational success has increased over the different age cohorts.

Specifically, the magnitude of this effect has changed from a low non-significant effect among the group of adolescents to an increasingly positive and significant effect between younger age cohorts. We also find that the effect of fathers' education on their children's educational attainment has largely decreased over the different age cohorts. Specifically, starting with a strong positive effect of fathers' education among adolescents, the effect decreases largely in size among children of younger cohorts and ultimately disappears among the youngest cohort group. This trend has coincided with a large increase in the relationship between mothers' education and their children's school achievements. These results indicate an important shift in the roles, responsibilities, and influence of Dutch mothers on their children over the past twenty years.

4.3 Robustness Test

We test for the validity of our estimates by running a two-step Heckman correction procedure (Heckman 1979) that corrects for sample selectivity and the missing values in the educational attainment of the children in our sample. The two-step procedure is constructed as followed: in the first step we estimate (through a probit model) the probability of respondents to have a valid education observation based on a series of individual level characteristics. In the second step, we include the associated Heckman correction term in the children's educational attainment equation which has been identified through two instrumental variables: i) *unemployment rate at the year of parent's unemployment* and ii) *region* in which parents lived between 1985 and 1988. Both of these variables are supposed to influence children's educational attainment indirectly by affecting the likelihood of the parent to become unemployed. Estimates are shown in Table 3. The selectivity correction itself (i.e., Inverse Mills Ratio) is not significant suggesting that the children who were not selected in our sample do not differ significantly in their educational outcomes from those included in our

sample. The inclusion of the selectivity correction does not change our results regarding the effect of mothers' and fathers' unemployment on their children's educational attainment. Interestingly, the magnitude of the unemployment indicators is slightly higher in the corrected models, suggesting that our models slightly underestimate the intergenerational effects of unemployment.

INSERT TABLE 3 HERE

5. DISCUSSION

This study used multiple data sources to examine how parent unemployment influences the subsequent educational attainment of their children twenty years later in the Netherlands. We combined literature from the disciplines of sociology, economics and culture of poverty to develop hypotheses about the process underlying the unemployed parent and child relationship. To test the validity of our hypotheses we integrated the OSA survey data with administrative register data to create an intergenerational dataset that traces the labor force dynamics of the parents and the educational attainment of their children.

Results from a series weighted OLS regression models demonstrate three central findings. First, we find that it is the volatility – rather than the average – in the occurrence and duration of parent unemployment that inflicts the largest negative effects on children's educational attainment. Specifically, fathers' employment instability along with its duration inflicts strong detrimental effects on their children's educational attainment. Such findings underscore recent approaches that emphasize the importance of stable parental socioeconomic resources for children's later success (Oreopoulus et al. 2008; Kalil and Wightman 2009; Torche 2010). Second, findings suggest that the negative effects of fathers' unemployment are primarily transmitted through the changing views of their wives and mothers towards the importance of work. These become negative over the duration of their husbands' unemployment and influence negatively their children's educational attainment. This process

seems to work similarly among employed parents and their children and helps us understand the power of changing work attitudes in the transmission process. A final key finding is that the timing of parents' unemployment influences children's educational attainment in distinct ways, with younger children more adversely impacted. In this respect, our findings about the added compilation of parental unemployment among the younger children not only supports but also adds to previous research on this topic by showing why adverse family economic conditions are most detrimental among the young (Duncan et al. 1998).

The general picture that emerges from our study is that parents' employment status is an essential determinant of children's educational success. The importance of parent employment status resonates the changing composition of the labor markets with more mothers in the labor force. As some studies indicate, the inclusion of more mothers in the labor force presented a paradox for many families over the past decades (Haveman et al. 1991). On the one hand, the inclusion of more mothers in the labor force has increased family's socioeconomic resources as well as mothers' role and influence on the educational attainment of their children. This is shown by the growing impact of Dutch mothers' education (over that of fathers') on their children's educational attainment. On the other hand, the reduced time that mothers spend with their children has presented a challenge for younger children who experience developmental problems that translate into reduced subsequent attainment. Our results regarding the lower attainment of children with unemployed mothers, however, lend support to the first view which expected that socioeconomic resources gained by a working mother dominate the negative impact related to her absence during work (Haveman et al. 1991). These socioeconomic gains increase as children grow older.

Perhaps more important are the behavioral gains for the mothers and fathers that are coupled with employment. Engagement in labor market increased fathers' opinions and views about work while boosting and encouraging their partners' work ethics. By passing on

positive views about the importance of work, parents and in particular mothers, play a crucial role in children's educational aspirations and their outcomes. The ability of mothers to manage the negative income situation by maintaining and increasing their view about the importance of a decent job may be helpful in reducing marital conflicts and family stress. This in turn helps children cope with the financial and social implications of their parents' unemployment and leads to higher educational attainment. The importance of mothers' work ethics for children's educational attainment is a novel finding. Yet, at the same time it opens up the question of whether the relevance of mothers' work ethics depends on mothers' work status or whether that differs in dual earner versus single earner households. In addition, considering the current family dynamics, we still do not clearly understand what implications fathers' unemployment would have for their children if mothers were absent. These questions go beyond the scope of this study but present important implications for future research in this area.

Our findings have important implications for policy as well. We have shown that unemployment limits families' abilities to invest in the lives and learning environments of their children, which in turn hampers their educational development and outcomes. We also show that these effects may exacerbate when parents, and in particular mothers, become discouraged and detached from labor 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. Strategies that increase parents' involvement in the labor market as well as activities that promote the normative aspects and importance of work should be encouraged and developed further. Cultivating positive norms about work is crucial because it influences the work aspirations and ambitions of future generations, which determine the kind of society that we will have in the future.

Our findings would be further strengthened with broader information on children's own work ethics and educational aspirations at the time of parents' unemployment that would ultimately affect their educational achievements. However, the scarcity of existing research on this topic combined with the unique Dutch case make the results of our study worthy of consideration. This is the first time that data from the OSA supply panel has been used to investigate the intergenerational effects of unemployment and the mediating role of work ethics. Our combination of the OSA supply panel with the Social Statistical Database has yielded a useful dataset. However, replication of this research is needed to investigate whether the conclusions we have drawn also remain stable. Possible alternative explanations for the trends we have found can therefore be further tested.

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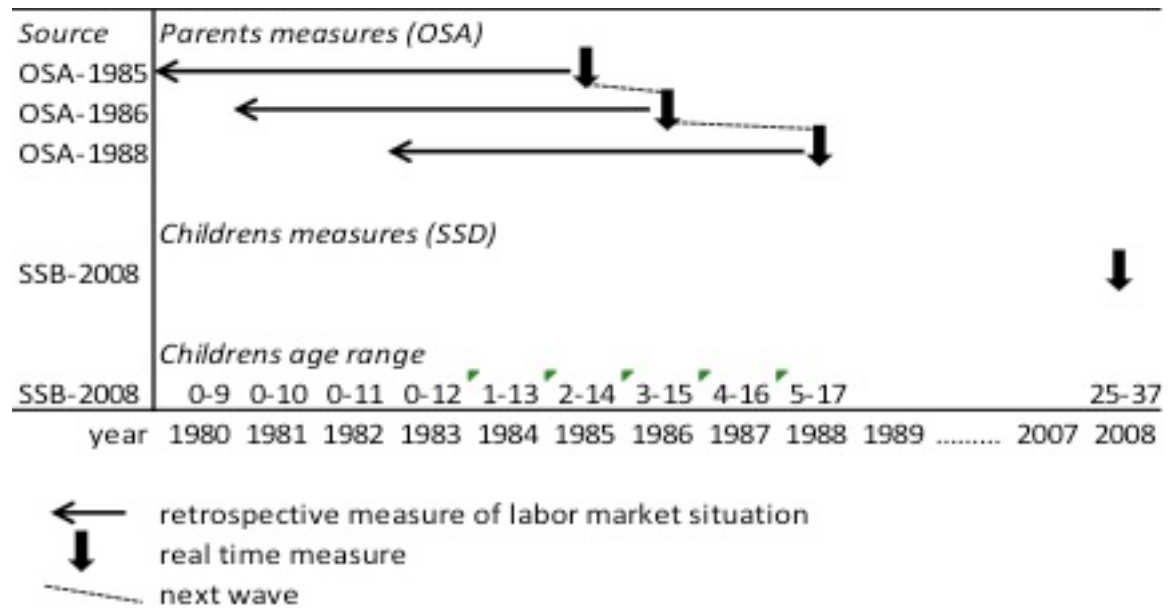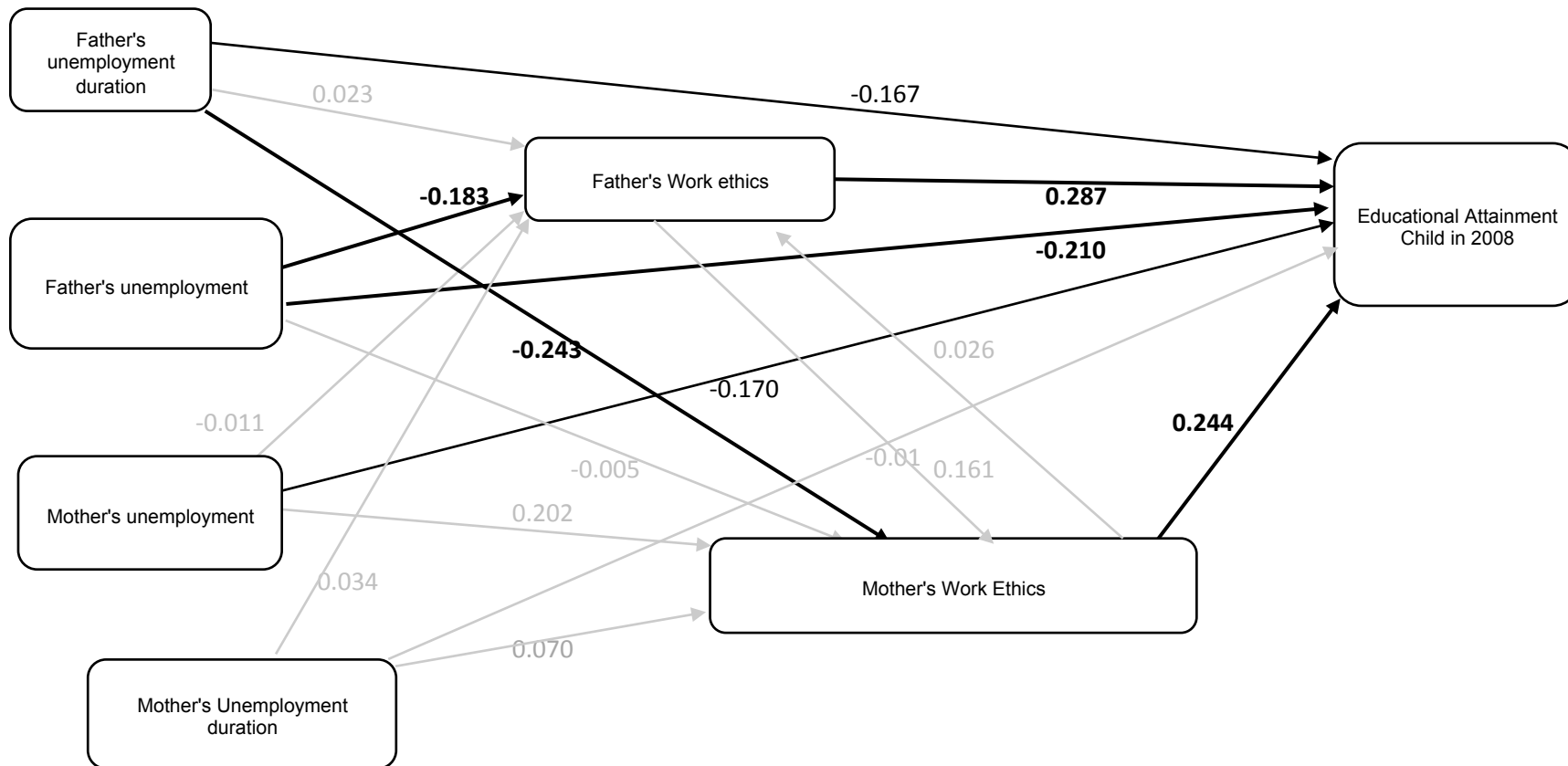**Figure 1.** Timeline of the measures

Figure 2. *(Standardized)* Pathways through which Fathers' and Mothers' Unemployment Occurrence and Duration influence their Children's Educational Attainment in 2008.

Note: Estimated models in the path analysis include covariates that control for parents' socioeconomic resources; family structure and children's age and gender.

Table 1. Unstandardized (B) Coefficients and Standard Errors (SE) from Weighted OLS Estimates Predicting Children's Highest Attained Education Level in 2008 (*n*=812)

	Model 1			Model 2			Model 3		
	B	SE		B	SE		B	SE	
Parents' unemployment 1980-1988									
Fathers' unemployment occurrence	-0.64	0.24	***	-	-		-	-	
Mothers' unemployment occurrence	-0.44	0.18	**	-	-		-	-	
Fathers' unemployment duration	-0.13	0.06	*	-0.13	0.07	**	-0.11	0.03	**
Mothers' unemployment duration	-0.01	0.06		-0.02	0.05		-0.03	0.04	
Parents' mean unemployment occurrence									
Fathers' mean unemployment				-0.67	0.22	***	-0.16	0.30	
Mothers' mean unemployment				-0.51	0.17	***	-0.22	0.19	
Parents' deviation from mean occurrence									
Deviation from fathers' mean				-1.40	0.42	***	-1.03	0.50	**
Deviation from mothers' mean				-0.26	0.34		0.06	0.31	
Parents' Work Ethics									
Fathers' mean work ethics							0.04	0.07	
Mothers' mean work ethics							0.22	0.07	**
Mothers' Change in Work Ethics[b]									
No change							-	-	
Negative change							-1.29	0.44	***
Positive change							1.58	0.47	***
Any change (for continuously employed)							0.54	0.17	**
One observation missing							0.37	0.24	
Both observations missing							0.37	0.40	
Fathers' Change in Work Ethics[b]									
No change							-	-	
Negative change							-0.23	0.34	
Positive change							0.15	0.65	
Any change (for continuously employed)							0.06	0.19	
One observation missing							0.57	0.23	**
Both observations missing							0.67	0.37	
Parents' Socioeconomic Resources									
Highest education father	0.35	0.07	***	0.35	0.07	***	0.26	0.05	***
Highest education mother	0.24	0.06	***	0.22	0.07	***	0.15	0.05	**
ISEI recent occupation father	0.00	0.00		0.00	0.00		0.00	0.00	
ISEI recent occupation mother	0.01	0.01		0.01	0.01	*	0.02	0.01	***
Net household incomes									
< 17.500	-	-		-	-		-	-	
17.501-20.000	0.38	0.19	**	0.42	0.22	**	0.31	0.17	**
20.001-24.000	0.03	0.26		-0.17	0.26		0.05	0.25	
24.001-28.000	0.27	0.21		0.11	0.21		0.32	0.21	
28.001-34.000	0.08	0.24		-0.01	0.22		0.29	0.20	
34.001-43.000	0.06	0.24		-0.02	0.23		0.06	0.21	

43.001>	0.00	0.29		-0.16	0.26		0.10	0.23
Missing	-0.10	0.24		-0.20	0.22		0.03	0.20
Family Structure								
+1 Sibling				-0.10	-0.05		-0.04	-0.02
Step-father				-0.07	-0.01		-0.06	-0.00
Step-mother				-1.02	-0.16	*	-0.99	-0.16
Children's Characteristics in 2008								
Age				0.02	0.01		0.00	0.01
Female				0.09	0.10		0.12	0.08
Constant	-0.02	0.59		0.20	0.56		-0.03	0.81
R^2	0.396			0.393			0.481	

Source: - Authors' calculations, using data from the OSA Supply Panels, 1985-1988 and the Sociaal Statistisch Bestand (SSD). *Note*: The dependent variable is *children's highest attained level of education in 2008*. All models, include control variables for *(1) whether mother/father were non-respondents; (2) whether mother/father had a missing ISEI status*; *(3) survey years in 1985, 186 and 1988 in which mothers and fathers participated in the OSA panel, unclassified reason of mother's job loss and unclassified reason of father's job loss.* *p<.05; ** p<.01; ***p<.001.

Table 2. Unstandardized (B) Coefficients and Standard Errors (SE) from Weighted OLS Estimates predicting Parents' Unemployment Effects across different Children's Ages (*n*=812)

	Model 1			Model 2			Model 3		
Main Effects	B	SE		B	SE		B	SE	
Parents' unemployment 1980-1988									
Fathers' unemployment occurrence	-0.16	0.17		-0.29	0.16		-0.37	0.16	**
Mothers' unemployment occurrence	0.16	0.07		0.09	0.07		-0.09	0.07	
Fathers' unemployment duration	-0.25	0.10	**	-0.07	0.05		-0.27	0.09	***
Mothers' unemployment duration	-0.07	0.06		-0.17	0.05	***	-0.08	0.05	
Age at Time of a Parent's Unemployment									
0-8 years	0.64	0.15	***						
9-12 years				-0.00	0.16				
13-17 years							-0.57	0.20	***
Interactions Effects									
Fathers' unemployment occurrence × 0-8 years	-0.29	0.11	***						
Mothers' unemployment occurrence × 0-8 years	-0.34	0.10	***						
Fathers' unemployment duration × 0-8 years	0.13	0.11							
Fathers' unemployment duration × 0-8 years	-0.06	0.09							
Fathers' unemployment occurrence × 9-12 years				0.12	0.13				
Mothers' unemployment occurrence × 9-12 years				-0.05	0.09				
Fathers' unemployment duration × 9-12 years				-0.44	0.13	***			
Fathers' unemployment duration × 9-12 years				0.12	0.11				
Fathers' unemployment occurrence × 13-17 years							0.19	0.11	
Mothers' unemployment occurrence × 13-17 years							0.38	0.12	**
Fathers' unemployment duration × 13-17 years							0.17	0.11	
Fathers' unemployment duration × 13-17 years							-0.06	0.08	
Constant	0.39	0.46		0.38	0.54		0.42	0.44	
R[2]	0.39			0.41				0.40	

Source: - Authors' calculations, using data from the OSA Supply Panels, 1985-1988 and the Sociaal Statistisch Bestand (SSD). *Note*: The dependent variable is *children's highest attained level of education in 2008*. All models, include control variables for *(1) whether mother/father were non-respondents; (2) whether mother/father had a missing ISEI status; (3) survey years in 1985, 186 and 1988 in which mothers and fathers participated in the OSA panel, unclassified reason of mother's job loss and unclassified reason of father's job loss.* *p<.05; ** p<.01; ***p<.001.

Table 3. Sensitivity analyses for Children's Highest Education in 2008 (*n*=812)

	OLS			Heckman		
	B	Beta		B	Beta	
Parents' unemployment, 1980-1988						
Fathers' unemployment occurrence	-0.609	-0.202	***	-0.756	-0.250	***
Mothers' unemployment occurrence	-0.470	-0.170	**	-0.598	-0.217	**
Fathers' unemployment duration	-0.117	-0.168	**	-0.119	-0.171	**
Mothers' unemployment duration	-0.008	-0.010		-0.217	-0.025	
Parents' Socioeconomic Resources						
Highest education father	0.336	0.305	***	0.491	0.456	***
Highest education mother	0.232	0.187	***	0.340	0.269	***
ISEI recent occupation father	0.003	0.032		0.105	0.116	
ISEI recent occupation mother	0.009	0.069		0.019	0.157	*
Net household incomes						
< 17500	-	-		-	-	
17500-18750	0.450	0.122		0.411	0.117	**
18751-22000	0.157	0.045		0.153	0.044	
22001-26000	0.407	0.131		0.363	0.117	
26001-31000	0.248	0.080		0.231	0.074	
31001-38500	0.173	0.059		0.178	0.061	
38501-50000	0.053	0.020		0.038	0.014	
Missing	0.173	0.080		0.212	0.098	
Inverse Mills Ratio				-3.920	-0.319	
Constant	0.797		*	1.271		**
R²	0.386			0.382		

Source: - Authors' calculations, using data from the OSA Supply Panels, 1985-1988 and the Sociaal Statistisch Bestand (SSD). *Note*: The dependent variable is *children's highest attained level of education in 2008*. *p<.05; ** p<.01; ***p<.001.

APPENDIX A

Table A1. *Descriptive Characteristics* (*n*=812)

	Mean	Standard Deviation
Parental unemployment 1980-1988		
Father unemployed, 1980-1988	0.048	0.213
Mother unemployed, 1980-1988	0.096	0.294
Fathers' unemployment spell		
< 1 year	0.012	0.110
2 years	0.008	0.092
3+ years	0.072	0.259
Mothers' unemployment spell		
< 1 year	0.019	0.139
2 years	0.018	0.134
3+ years	0.046	0.211
Parental Socioeconomic Resources, 1985-1988		
Fathers' Education Level		
(Pre-)primary education	0.046	0.211
Lower secondary education	0.256	0.436
Upper secondary education	0.247	0.431
Tertiary education, first stage	0.231	0.422
Tertiary education, second stage	0.178	0.383
Mothers' Education Level		
(Pre-)primary education	0.078	0.269
Lower secondary education	0.369	0.482
Upper secondary education	0.178	0.383
Tertiary education, first stage	0.264	0.441
Tertiary education, second stage	0.098	0.298
Parental ISEI status		
ISEI recent occupation father	50.44	11.99
ISEI recent occupation mother	43.66	8.31
Net Household incomes		
< 17.500	0.029	0.169
17.501-20.000	0.055	0.228
20.001-24.000	0.051	0.221
24.001-28.000	0.123	0.328
28.001-34.000	0.145	0.352
34.001-43.000	0.124	0.330
43.001>	0.214	0.410
Missing	0.256	0.436

Parental Work Ethics, 1985-1988

Fathers' Work Ethics at time t	3.677	0.650
Mothers' Work Ethics at time t	3.564	0.648

Mothers' Change in Work Ethics

Positive Change	0.034	0.208
Negative Change	0.046	0.208
Any change (for continuously employed)	0.224	0.417
No Change	0.028	0.165
One observation missing	0.410	0.492
Both observations missing	0.225	0.418

Fathers' Change in Work Ethics

Positive Change	0.010	0.099
Negative Change	0.062	0.241
Any change (for continuously employed)	0.231	0.422
No Change	0.002	0.089
One observation missing	0.402	0.490
Both observations missing	0.296	0.457

Family structure, 1985-1988

+1 sibling	0.560	0.496
Step-father	0.027	0.162
Step-mother	0.008	0.092

Children's Characteristics in 2008

(Pre-)primary education	0.012	0.110
Lower secondary education	0.060	0.238
Upper secondary education	0.326	0.469
Tertiary education, first stage	0.408	0.491
Tertiary education, second stage	0.192	0.394
Age	30.63	3.792
Female	0.502	0.500

Source: Authors' calculations, using data from the OSA Supply Panels, 1985-1988 and the Sociaal Statistisch Bestand (SSD).

APPENDIX B

The Linking Process

The OSA is a panel study that is continually refreshed and is targeted at a representative sample of 4,000 to 5,000 respondents in each wave. The first wave was interviewed in 1985 (with a retrospective component reaching back to 1980) and then re-approached in 1986 with further biannual waves until 2006. For this study only the data from the waves 1985, 1986, and 1988 were used to identify parents with different labor force statuses. This coincides with a period of economic downturn where many families were hit by unemployment in the Netherlands.

The linking process of the parents in the OSA Supply Panel and the children in the SSD involved several steps, the linking effectiveness of which is shown in Figure B1. In the first step, using parents' birth dates, sex and address information, we could trace 2,225 children who were between 0-17 years of age when their parents participated in the OSA panels of 1985, 1986 and 1988. From the 2,225 children whose parents participated in the OSA between 1985 and 1988, parents from only 1,596 children could be identified. This means that at this stage of the linking process only 72% of the parents could be linked to their children. The reason for this matching result is that the information records in the register data (with information on the children) start from 1995 and do not coincide with the information of the parents in the OSA panels that originate from 1985-1988. An implication of this is that any information due to changing home addresses, emigration or death that occurred between 1988 and 1995 has been lost. This loss is presumably selective such that all parents who moved before 1995 could not be identified, and thereby lead to a lower parent-child match at this stage.

Figure B1. *The Linking Process between the Data of the Parents and the Children*
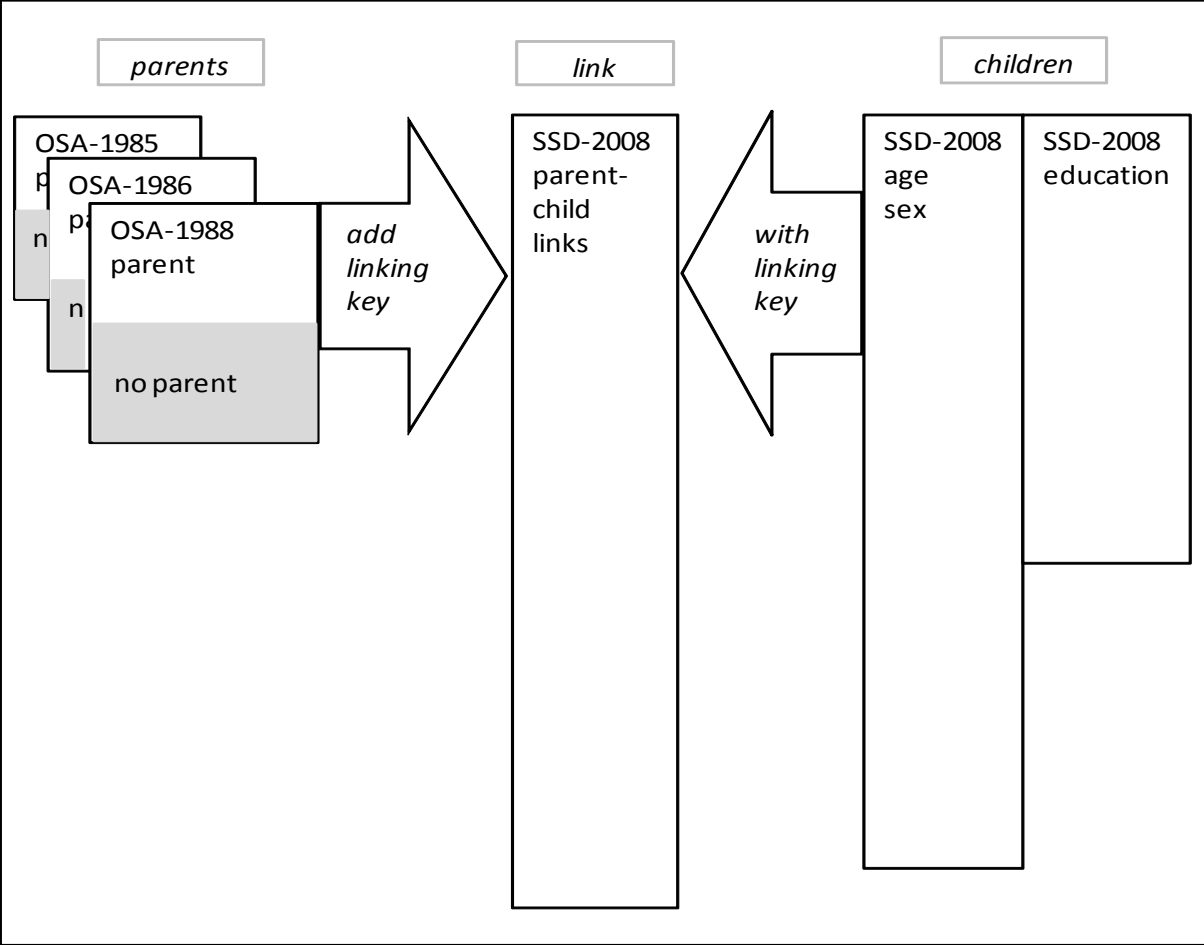
In a second step, and in addition to selecting by age, we selected children with a valid score for educational attainment. A limitation of the register data on education is that it does not cover the entire population of the Netherlands. The eldest register with information on higher education originates from 1985-2009 (Linder et al. 2011), which reduces our sample to 812 children. As shown in Table B1, by the end of the linking process only 36% of the initial sample of children could be used for our analyses.

Table B1. *The Effectiveness of the Linking Process*

	N	%
OSA-waves 1985, 1986 and 1988		
Children aged 25-37 of all parents	2,225	100
Children aged 25-37 of all parents	1,596	72
Social Statistical Database 2008		
Children from identified parents with known educational attainment	812	36

Source: Authors' calculations, using data from the OSA Supply Panels, 1985-1988 and the Sociaal Statistisch Bestand (SSD).

The decreasing number of observations through the several stages of the linking process indicates that this could be selective in nature, meaning that certain groups are over-represented. To test for this, in Table B2, we compared parents' educational attainment, unemployment and work ethics between the linked and the parents in the initial original sample.

Table B2. *Selectivity of Parental Educational attainment, Unemployment and Work Ethics by Linking OSA Labor Supply Panels and the SSD Register Data*

	Original	*Linked*	*Difference*	*Significance*
	Mean			
Education father	2.547	2.796	0.249	n.s.
Education mother	2.302	2.466	0.164	n.s.
Father unemployed	0.082	0.062	-0.020	n.s.
Mother unemployed	0.090	0.098	0.008	n.s.
Mothers' Work Ethics at time *t*	2.390	2.322	-0.068	n.s.
Fathers' Work Ethics at time *t*	2.538	2.435	-0.103	n.s.
N	5,043	812		

Source: Authors' calculations, using data from the OSA Supply Panels, 1985-1988 and the Sociaal Statistisch Bestand (SSD).

Although, none of the differences were statistically significant, the differences are substantial enough and need to be weighted to represent the population properly. Therefore, a weighting factor was used that takes into account age, gender, ethnic origin, employment status (in or out of the labor force), benefit status, and the level of education as determined by

the work-placement branch of the Employee Insurance Agency [UWV-werkbedrijf] (only

applies to those seeking work) (Linder, Van Roon and Bakker, 2011).

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[i] In the end of 1988 one Dutch guilder was approximately equal to US $0,50.