Parental Unemployment and Children's Happiness: A Longitudinal Study of Young People's Well-Being in Unemployed Households

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Abstract

Using a unique longitudinal data of British youths we estimate how adolescents' overall happiness is related to parents' exposure to unemployment. Our within-child estimates suggest that parental job loss when the child was relatively young has a positive influence on children's overall happiness. However, this positive association became either strongly negative or statistically insignificant as the child grew older. The estimated effects of parental job loss on children's happiness also appear to be unrelated to its effect on family income, parent-child interaction, and children's school experience. Together these findings offer new psychological evidence of unemployment effects on children's livelihood.

JEL Classification: D1, I3, J6
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1. Introduction

It is well-established from cross-section and longitudinal studies that joblessness depresses mental well-being and lowers life satisfaction for the unemployed persons more than any other single characteristic, including important negative ones such as divorce and separation (Clark and Oswald, 1994; Darity and Goldsmith, 1996; Winkelmann and Winkelmann, 1998; Clark, 2003; Powdthavee, 2011). Yet there has been surprisingly little research on the effects of job loss on the psychological well-being of the children of the unemployed. While previous research has shown that unemployment hurts less psychologically for people whose spouse is also unemployed (Clark, 2003)[2], much less is known about the association between parental unemployment and children's subjective outcomes such as happiness and self-esteem; whether the timing of parental unemployment matters to children's happiness while they were growing up; and whether there is a scarring effect of long-term parental unemployment on their children's subjective well-being. These are difficult questions to address empirically, in part because there are only a few available nationally representative longitudinal data sets that repeatedly asked children to self-rate their happiness levels over time. Yet knowing whether a parent's experience of job loss contributes negatively or positively to children's overall happiness seems important for policy makers to be able to fully assess the total psychic cost of unemployment that had been incurred by the individuals and the family members of the unemployed.

Our paper attempts empirically to explore this issue by estimating the longitudinal relationship between parental unemployment and children's self-reported happiness with life scores over time. Using a unique sample of nationally representative British youths (age 11-15 years old), this paper initially demonstrates that the association between an onset of parental unemployment and children's happiness is non-significant on average. Further investigations, however, suggest that the timing of parental unemployment matters and that younger children may have even benefited psychologically from parents being temporarily out of work. By contrast, we find the estimated relationship between parental unemployment and children's overall happiness is either non-significant or strongly negative for older

[2] For more evidence of others' unemployment as a positive externality on the unemployed's psychological well-being, see Powdthavee (2007), Shields et al. (2008), Clark et al. (2009).

children in the sample, and that the implied effect of a long-term paternal unemployment on child's happiness is often negative, sizeable, and statistically significant. We also uncover some evidence of boys and girls reacting differently to paternal and maternal unemployment when they were asked to report their overall happiness in the year of unemployment. Finally, we are able to show that changes in children's happiness are not merely noises and that they do indeed predict something important in the form of future educational attainments at the age of 16.

2. Background

Previous studies in this area have focused primarily on formulating and estimating the effects of maternal employment on children's educational outcomes (Bernal, 2008; Bernal and Keane, 2010; Ermisch and Francesconi, 2013). Based on Gary Becker's model of household production function of human capital (Becker, 1981; see also, Becker and Tomes, 1986), the basic idea employed by these studies is that parents maximize their utilities subject to constraints by choosing between time spent working in the market, which has a positive effect on their current standard of living, and time input into human capital production of their children, which has a positive effect on their future standard of living through their children's incomes.[3] Holding income effect constant, one hypothesis is that maternal labour supply will have a negative influence on children's cognitive development as it reduces the time spent in enriching home environments.

The empirical evidence is mixed. Findings range from the effects of maternal employment in the first few years of the child's life on later cognitive outcomes being negative (Desai et al., 1989; Baydar and Brooks-Gunn, 1991; Belsky and Eggebeen, 1992; Gregg et al., 2003; Baker et al., 2008; Bernal, 2008; Herbst and Tekin, 2010) to its being statistically insignificant (Blau and Grossberg, 1992; Harvey, 1999; Kalil and Ziol-Guest, 2008) to its being positive and quantitatively important (Vandell and Ramanan, 1992; Moore and Driscoll, 1997).

One explanation for these differences in the results is that the timing of mother's time input matters. For example, Han et al. (2001), Waldfogel et al. (2002), Baum (2003), and James-Burdumy (2005) have reported evidence of an adverse

[3] For other related studies that rely on the same theory of household production function, see, e.g., Todd and Wolpin (2003, 2007), Cunha and Heckman (2003), and Cunha et al. (2010).

effect on the child's educational attainments of maternal employment that begun in the first year of the child's life, whereas employment after first year appears to have more mixed effects. Others have found the negative effect on child's cognitive outcomes to be associated with maternal employment over the first five years of the child's life (Joshi and Verropoulou, 2000; Bernal, 2008; Bernal and Keane, 2010; Liu et al., 2010). Furthermore, Ruhm (2008) reports evidence that maternal labour supply is only harmful to children from "advantaged" families, while "disadvantaged" children typically benefit from mothers working limited number of hours in the market. More recently, Ermisch and Francesconi (2013) use instrumental variables within-family estimators to show that maternal labour supply when the child was aged 0-5 has a negative effect on the probability of achieving an A-level qualification or higher, and that the adverse effect is much stronger on children of less-educated mothers.

One question of interest about the roles of parental employment on child's development is whether the effects of losing one's job are the same as the effects of parents choosing to spend more time at home with the child. Since job loss reduces both future family income and the likelihood of future employment, it is possible that the negative income effect will outweigh the positive substitution effect of parental time input in the case of involuntary unemployment (Becker and Tomas, 1986; Duncan and Brooks-Gunn, 1997). Another hypothesis is that job loss imposes mental distress on the parent (Clark and Oswald, 1994; Clark, 2003), which could have a negative spillover effect on the child (Powdthavee and Vignoles, 2008). Job loss could also trigger other disruptions to home environments that can impede child's cognitive development, such as parental divorce or relocation (Gruber, 2004). For more mature children, parental unemployment can also increase anxiety and embarrassment, and reduce aspirations and expectations for the children of the unemployed (McLoyd, 1989; Christofferson, 1994). They may also get teased and bullied more often than those whose parents are in full-time employment, which could in turn affect their happiness with life overall (Brown and Taylor, 2008; Powdthavee, 2012)

Focusing more specifically on parental unemployment rather than employment, Rege et al. (2011) examine the effects of parental unemployment on children's educational performance in Norway. Using plant closures as the identification strategy, the authors find a detrimental and sizeable effect of paternal

unemployment on graduation-year grade point average (GPA) for more mature children (aged 15-16). By contrast, maternal job loss has been found to have a positive albeit statistically insignificant effect on children's school performance. In a similar study, Coelli (2011) uses Canadian data to show that parental job loss from layoffs and business failures that occur when youth complete high school has a negative effect on children's enrollment at university and community college.

In contrast, econometric evidence on the effect of parental unemployment on children's emotional development is scarce. One of the few papers to study the psychological effect of parental unemployment on children's subjective well-being is by Kind and Haisken-DeNew (2012). Using a panel data of German adults, the authors estimate the short-run effect of parental unemployment on the life satisfaction of their children. Focusing only on young adults (aged 17-25) who still lived at home with at least one parent, they initially find a statistically insignificant association between current parental unemployment and children's life satisfaction. But after spitting the sample by gender, they are able to show paternal job loss from company closures to be associated negatively and statistically significantly with son's life satisfaction but with not daughter's. While interesting, the paper however does not consider the possibility that the psychological effect of parental unemployment may differ across different stages of child development, nor whether there is a scarring effect of long-term parental unemployment on child's well-being.

We would like to add to this small literature by using a unique longitudinal data set of British youths to address three relatively unexplored questions about the potential psychological effects of parental unemployment. First, are adolescents living with an unemployed parent less happy with life on average, and whether the association is robust to controlling for family income and other socio-economic backgrounds? Second, is the association between parental job loss and children's overall happiness more negative for older children compared to younger children? And finally, does long-term parental unemployment scar the psychological well-being of children?

3. Data

The current study uses data taken from the British Household Panel Survey (BHPS). The BHPS is a nationally representative household panel covering a total sample of

over 10,000 individuals in the United Kingdom, and the survey has been conducted between September and Christmas each year since 1991 (Taylor et al., 2002). There is both entry into and exit from the panel, leading to an unbalanced panel data set with an increasing number of individuals interviewed over time. This is due to the inclusion of children from the original households who turn 16 and enter the survey, and to the addition of the new members of the households formed by original panel members.

Our paper focuses on the youth sample that appears from Wave 4 (1994) onwards. The sample consists of all 11-15 years old living in each household in the sample. Most of the youth questionnaires such as attitudes towards schools and subjective well-being were answered by the youth themselves, with 773 children interviewed in the first wave (Wave 4). The number expands to 1,217 children interviewed in the last BHPS wave (Wave 18).

The outcome variable of interest is the youth's self-reported happiness with life score. Since Wave 4, each adolescent aged 11-15 is asked to describe on a 7-point scale from 1 (completely unhappy) to 7 (completely happy) how happy they feel about their life as a whole (*YPHLF*), which is similar to the life satisfaction question used to ask on all adults in the main BHPS sample. The response rate to the happiness with life question is very high at 99.5% across all waves. There is a long right hand tail in the distribution of children's happiness, with 70% reporting high happiness levels of 6 and 7. As the child turns 16, he or she will enter the main BHPS survey and will therefore automatically drop out from the Youth sample.

Information regarding each child's parents, including data on parental unemployment, both past and present, is matched to the youth sample from the main adult sample. For the purpose of our analysis, we focus our attention on children where both parents are still present and traceable in the panel, which enables us to estimate the effects of both paternal and maternal unemployment in the same regression equation.[4] This sample was selected because these are the most common family type in our data set, and we simply do not have enough observations of, for instance, single-parent households to carry out an extensive analysis on the effect of parental unemployment on children's happiness. This produces an unbalanced panel

[4] The sample thus consists mostly of married/cohabiting parents, with a handful of separated and divorced parents who continued to participate in the surveys despite living in different households.

of 11,415 observations (3,675 children) in total. Of those, 5,827 observations are boys, and 5,588 observations are girls.

Information on parental unemployment is drawn from a question in the main BHPS survey that asks all adults about their current labour force status.[5] Across the entire youth sample with self-reported happiness data, there are 549 observations (or 4.8% of the sample) and 160 observations (or 1.4% of the sample) of children whose father and mother were unemployed at the time of the interview. Only 20 observations (0.2%) of children are those whose both parents are unemployed in the same survey year.

Appendix A reports frequencies of parental unemployment in the Youth sample. Looking across columns, we can see that most parents – 64% and 86% of children's fathers and mothers – were unemployed only once in the Youth panel, thus suggesting that most unemployment spells are short-term for these parents. A significant number of unemployed mothers changed their current labour force status from 'unemployment' to one of the 'inactive in the labour force' categories – e.g., looking after home or student – following one or two years of being unemployed.

4. Empirical strategy

Assume there exists a reported well-being function for children aged between 11 and 15 years old of the following form

$$r = h(u(p, z, s, t)) + e, \tag{1}$$

where r denotes some self-reported number or level collected in the survey. The $u(\ldots)$ function is the child's true well-being and is observable only to the person asked; $h(.)$ is a non-differentiable function relating actual to reported well-being; p represents a set of parental characteristics; z is a set of the child's personal characteristics; s is a set of child's experiences at home and at school; t is time trend; and e is an error term that subsumes the child's inability to communicate accurately their well-being levels.

A pooled cross-section relationship between parental unemployment and child's happiness can then be determined by estimating the empirical counterpart of (1), which for the current article is

[5] One could potentially use the 'Employment History' files in the BHPS to construct the full work history of parental unemployment. However, doing so would imply an unnecessary loss of data, i.e. the number of observations will drop from 11,451 to 2,395 if the full work history is used to construct our past and present unemployment variables.

$$H_{it} = \alpha + \beta FU_{it} + \gamma MU_{it} + X'_{it}\lambda + T_t + \varepsilon_{it}, \quad (2)$$

where H_{it} is self-rated happiness with life score (measured on a 7-point-scale, ranging from 1 "completely unhappy" to 7 "completely happy") of adolescent *i* in year *t*; FU_{it} is a dummy variable with a value of 1 if the child's father is unemployed in year *t* and 0 otherwise; MU_{it} is a dummy with a value of 1 if the child's mother is unemployed in year *t* and 0 otherwise; X'_{it} is a vector of other control variables, including parents' socio-economic status and the child's personal experiences and characteristics; T_t denotes linear time trend or year dummies; and ε_{it} is the error term. The parameters of interest are β and γ, which respectively represent the estimated 'effects' of father's unemployment and mother's unemployment on child's happiness.

Our next specification utilizes the longitudinal nature of the Youth survey and controls for the unobserved individual fixed effects of the child in the estimation process. The process removes the influence of individual's inborn predispositions on self-reported happiness and captures all unobserved person-specific heterogeneity in the youth's happiness data that remain constant over time. One could imagine, for example, that some children are born with certain personality traits that make them happy – and keep them happy – throughout their childhood. Since children's personality traits are likely to be correlated with many of the unobserved time-invariant characteristics of the parents, including parents' own personality traits, that may also be considered important predictors of behaviours in the labour market, our ability to control for the individual fixed effects of the child means that we can address at least some of the endogenous effects associated with parents selecting themselves into unemployment.[6] It is also worth noting that this is an equivalent model to the within-child estimators discussed in Todd and Wolpin (2003).

We can now rewrite our error term as

$$\varepsilon_{it} = u_i + v_{it}, \quad (3)$$

where u_i denotes unobserved individual fixed effects, and v_{it} is the random-error term, and the new regression equation to be estimated is

[6] While individual FE estimator helps solve part of the selection problem, it does not get rid of the underlying correlations between parental unemployment and their parenting skills that are family specific. One way to solve the issue, as suggested by one of the referees, is to estimate sibling fixed effects model by exploring sibling differences between sibling with the same age at different points in time. Unfortunately, we simply do not have enough observations of overlapping siblings in our Youth sample to estimate a statistically meaningful sibling fixed effects model.

$$H_{it} = \alpha + \beta FU_{it} + \gamma MU_{it} + X'_{it}\lambda + T_t + u_i + \upsilon_{it}, \quad (4)$$

This can then be estimated using the individual fixed effects (FE) or the 'within-child' estimator, which estimates within-person deviations from the mean or changes over time. This process removes individual fixed effects entirely from the regression model so that inference is driven only by time-varying characteristics.

Another advantage of the FE estimator is that it allows us to track longitudinally how the relationship between parental unemployment and child's happiness changes over the course of his or her formative years. To do this, we expand (4) to include a set of interaction dummies between age of the child and parental unemployment status as followed:

$$\begin{aligned} H_{it} = {} & \alpha + \beta FU_{it} + \gamma MU_{it} + \sum_{a=12}^{15} A'_{ia}\delta_a + \sum_{a=12}^{15} \varphi_a (A_{ia} \times FU_{ia}) \\ & + \sum_{a=12}^{15} \theta_a (A_{ia} \times MU_{ia}) + X'_{it}\lambda + u_i + \upsilon_{it}, \end{aligned} \quad (5)$$

where A'_{ia} is a vector of age dummies that runs from 12 to 15 years old. Here, our parameters of interest are φ_a and θ_a, which represent the interaction effects of having an unemployed father and an unemployed mother on child's happiness at age *a*. So, in order to test for whether the effects of parental unemployment on child's happiness are constant over time the following restrictions are imposed: $\varphi_{12} = \varphi_{13} = \varphi_{14} = \varphi_{15} = \theta_{12} = \theta_{13} = \theta_{14} = \theta_{15} = 0.$

In principle, we can also use (5) to calculate the *implied* effects of continuing paternal and maternal unemployment on child's happiness from 11 to 15 years old. The formal hypotheses that we use to test for the well-being effects of long-term paternal and maternal unemployment are:

$$H_0 : \beta + \sum_{a=12}^{15} \varphi_a = 0 \quad \text{versus} \quad H_1 : \beta + \sum_{a=12}^{15} \varphi_a \neq 0 \quad (6)$$

$$H_0 : \gamma + \sum_{a=12}^{15} \theta_a = 0 \quad \text{versus} \quad H_1 : \gamma + \sum_{a=12}^{15} \theta_a \neq 0 \quad (7)$$

Almost all of our estimation is done using Ordinary Least Squares fixed effects model although, as we have shown later on, similar conclusions can be reached when a Conditional Logit estimator was used to estimate a model with a dichotomous happiness measure as an outcome variable (Ferrer-i-Carbonell and Frijters, 2004; see also the approach by Clark et al., 2001).

5. Results

5.1. Parental job loss and children's happiness

Our analysis of the raw data set suggests that children were probably more likely to be less happy rather than happier with their life overall when one of their parents is unemployed. For example, a cross-tabulation of children's happiness by paternal unemployment produces a mean happiness level of 5.77 (*S.E.*=0.057) for children living with an unemployed father compared to the mean level of 5.89 (*S.E.*=0.013) for the reference group (i.e., fathers in full-time employment), although we cannot reject the null hypothesis of equal means across the two groups. On the other hand, a cross-tabulation of children's happiness by maternal unemployment produces mean happiness levels of 5.70 (*S.E.*=0.121) for children living with an unemployed mother and 5.92 (*S.E.*=0.013) for the reference group, and this we can reject the null hypothesis of equal means at the 10% confidence level.

Table 1 moves on to present transition matrices of parents moving in and out of unemployment between year *t* and *t*-1. It also reports how these changes in unemployment status correlate with changes in children's happiness over these two periods.

Looking across columns of Table 1, we can see that there is some weak longitudinal evidence of a negative association between parental unemployment and child's happiness. For example, a move from "Father in employment in *t*-1" to "Father in unemployment in *t*" is associated with a drop in the child's happiness level of -0.180 (*S.E.*=0.184*)*, while a move from "Mother in employment in *t*-1" to "Mother in unemployed in *t*" is associated with a drop in the child's happiness level of -0.082 (*S.E.*=0.360). These numbers are visibly more negative, albeit with significantly larger standard errors, than comparative changes in child's happiness associated with parents staying in employment across *t* and *t*-1; the average changes in child's happiness are -0.075 (*S.E.*=0.034) and -0.063 (*S.E.*=0.034) for fathers and mothers who continued to stay in employment throughout *t*-1 and *t*, respectively.

What might explain the weak relationship between parental unemployment and child's happiness observed in the raw data? One hypothesis is that the association between parental unemployment and children's happiness is different across the distribution of children's age. We conduct a first test of this hypothesis by plotting, in

Figures 1a and 1b, the average child's happiness levels for each parental employment status and examine whether the happiness gap varies significantly across different ages of the child. In both figures, we can see that the happiness gap is largest for the oldest children in our sample, i.e. the 15-year-old. This exercise tells us that it may only be older children who reported lower overall happiness with life scores when one of the parents is unemployed.

Table 2 presents the paper's first set of regression results. Using random effects Generalized Least Squares estimator, Column 1 estimates Eq.2 with contemporaneous paternal and maternal unemployment status on the RHS and exogenous variables – e.g., number of siblings between the ages of 11 and 15 years old, as well as dummy variables representing age and gender of the child, age of the father, age of the mother, regional dummies, and year dummies – as the only control variables. With this basic specification, we can see that the coefficients on both paternal and maternal unemployment, though negative, are statistically insignificantly different from zero. Re-estimating the equation using the child fixed effects (FE) estimator in Column 2 does not improve the significance of the results either, with paternal unemployment now displaying a reverse in the coefficient sign from negative to positive. Hence, even with the inclusion of these simple control variables, there does not seem to be any statistical evidence in our youth sample of an important link between parental unemployment and children's overall happiness with life on average. It is worth noting that the observed pattern is consistent with Kind and Haisken-DeNew (2012) who also initially reported a statistically insignificant association between current parental unemployment and children's life satisfaction.[7]

Column 3 of Table 2 includes a set of interactions between parental unemployment and age of the child respondent in the re-estimation, i.e., Eq. 5's basic specification. In this specification, the FE estimate of the main paternal unemployment effect – which, in this particular case, can be thought of as the estimated effect of paternal unemployment on child's happiness when the child was 11 years old – is positive and statistically significant at the 1% level; the estimated b is 0.345, with a well-determined standard error of 0.131. However, it can be seen from the table that this positive paternal unemployment effect is significantly moderated by the age of the child. For instance, the estimated effect of paternal

[7] This applies to the aggregate unemployment variable – i.e. not classifying whether unemployment is due to exogenous or endogenous reasons – in their German data set.

unemployment when the child was 12 years old is (0.345 – 0.378) = -0.033 [*S.E.* = 0.113; *p*-value = 0.772], and (0.345 – 0.393) = -0.048 [*S.E.*=0.128; *p*-value = 0.704] for when the child was 15 years old.

A similar pattern is observed on maternal unemployment. While the main effect of maternal unemployment on child's happiness is imprecisely estimated, its effect when the child was 15 years old is negative and highly significant at (0.200 – 1.067) = -0.867 [*S.E.* = 0.263; *p*-value = 0.001].

Column 4 of Table 2 controls for objective parental characteristics by including in the regression equation dummy variables for father is self-employed, mother is self-employed, father is inactive in the labour market, mother is inactive in the labour market, the highest completed education level for both parents, the health status of both parents, and the marital status of the parents, as well as father's mental health, mother's mental health, and log of real household income.[8] Controlling for these objective indicators hardly changed the size and the significance of the coefficients on both paternal and maternal unemployment, thus suggesting that the statistical association between parental unemployment and children's happiness is not hugely confounded by omitted parental socio-economic statuses such as changes in parents' mental health and losses of family income brought about by unemployment. The positive coefficients on parental unemployment when the child was 11 years old is also consistent with the empirical evidence that parental employment is typically more detrimental for younger children than for older children (e.g. Baum, 2003; James-Burdumy, 2005).

One question of interest is whether we can explain a large part of the observed relationship between parental unemployment and children's happiness just by looking at how parental unemployment is correlated with measures of children's experiences at home and elsewhere. This may include, for instance, the extent of school bullying and how much parent and child interact at home. To test this, Column 5 of Table 2 includes, as additional control variables, different measures of the young person's experiences at home and at school. This consists of indicator variables representing fear of being bullied at school, dummies for whether (and how often) the child has fought with someone in the previous month, number of close friends, and frequency of talking to mum and dad about things that matter which represents parent-child

[8] The estimated coefficients on additional control variables are reported in Appendix B.

interactions, as well as self-reported happiness with friends, happiness with appearance, happiness with school work, and happiness with family.

The addition of further controls in Column 5 reduced the absolute size of the main effect of paternal unemployment, while increased slightly the absolute size of the main effect of maternal unemployment. Despite these changes to the main effects, the inclusion of child's experiences at home and at school hardly changed the size and the significance of the interaction coefficients at the age of 15 for both paternal and maternal unemployment, thus implying that our original findings of heterogeneous effects of parental unemployment on children's happiness with life hold even after controlling for an extensive set of childhood experiences at home and at school. While paternal and maternal unemployment are associated positively and statistically significantly with overall happiness when the child is 11 years old, the coefficient on maternal job loss when the child is 15 years old continues to be negative, sizeable and statistically well-determined. For readers who are interested in seeing all of the Column 5's estimated effects of parental unemployment on child's happiness at different ages of the child, we refer you to the numbers reported in Appendix C.

One objection of Table 2's results is that self-reported child's happiness is life is measured ordinally rather than cardinally. Although previous studies have empirically shown that it makes no qualitative differences whether one assumes cardinal or ordinal scales of subjective well-being data (e.g., Ferrer-i-Carbonell & Frijters, 2004), as a robustness check, we convert the child's happiness score into (0,1) dummy for having scored 5 or higher on the seven-point happiness scale, and re-estimate Eq. 5's specification using the conditional fixed effects logit estimator. The panel logit technique, which reduces the sample size by approximately 70%, continues to produce interaction terms that are negative and statistically significant for children with an unemployed father, whilst the interaction terms are negative but imprecisely estimated for children living with an unemployed mother.

Although most unemployed parents in our sample either went on to find employment or left the labour force altogether after only one or two years of unemployment, we can nevertheless calculate the implied effects of long-term parental unemployment on children's happiness. Based on Column 4's estimates, the implied effect of having lived with an unemployed father for five consecutive years from age 11 to 15 on children's happiness is marginally significant at -0.783 [*S.E.*=0.424; *p*-value=0.065]. Given the distribution of children's happiness, this is

considered to be a huge effect. To give an example, the implied effect is twice the size of the negative association found between child's happiness and the fact that the child had fought ten times or more with someone in the previous month. Nevertheless, given that long-term paternal and maternal unemployment among families with teenage children is uncommon in our data set and the unbalanced nature of our panel sample, the interpretation of these estimated implied effects should be treated with care.

Are there gender differences to our results? To investigate, we re-estimate Column 4 of Table 1's specification separately for boys and girls and report the results in Table 2. Our FE estimates suggest that there may have been some psychological benefits to paternal (maternal) unemployment for the youngest girls (boys) in our Youth sample; the estimated coefficient on maternal unemployment in the Boys equation is 0.664 [*S.E.*=0.341; *p*-value=0.051], whilst the estimated coefficient on paternal unemployment in the Girls equation is 0.477 [*S.E.*=0.180; *p*-value=0.008]. These positive correlations are, however, offset by the negative interaction effects between the age of the child and maternal unemployment for boys, and the interaction effects between age of the child and paternal unemployment for girls. More specifically, we find the short-run effects of an onset of paternal and maternal unemployment on child's happiness with life to be statistically insignificant for older girls and boys, respectively. With respect to the implied effects of long-term parental unemployment, the implied effect of five consecutive years of paternal unemployment on girls' happiness with life is -1.402 [*S.E.*=0.589; *p*-value=0.017], while the implied effect of five consecutive years of maternal unemployment on boys' happiness with life is -2.349 [*S.E.*=1.146; *p*-value=0.041]. Again, as previously stated, we should continue to treat these implied effects with care.[9]

One concern is that attrition from the panel could be problematic. It might be argued that unemployed parents, and consequently also their children, dropped out disproportionately often from the survey, and the estimated unemployment effects would be merely reflecting those who remain in the sample. To be sure that the results are not being driven by individuals who are in the panel briefly, Appendix D re-estimates Eq.5's specification on a smaller balanced sample, i.e., children who were

[9] Another way to test for the implied happiness effects of long-term parental unemployment is by estimating a happiness regression equation with lagged parental unemployment. We carried out these tests in our previous version of the paper (Powdthavee and Vernoit, 2012) and found similar 'scarring' effects of past paternal unemployment on the happiness and self-esteem of children.

present in every wave since the age of 11 to 15 years old. Despite some notable increases in the standard errors, we can see from the table that there is little change in the size and the significance of the estimated coefficients on the main and the interaction effects of both paternal and maternal unemployment for the entire sample, as well as separately for boys and girls.

Another question of interest is whether children view parental unemployment to be any different from other types of non-labour market statuses, e.g., looking after home, in full-time education, or on maternity leave. In other words, is it joblessness rather than unemployment that determines children's happiness with life? We formally test this hypothesis by including in Eq.5 additional interaction terms between parents being out of the labour force and the age of the child, and report our results in Appendix E.

What we find is that the decision to leave the labour force for the parents does not typically have the same influences on children's happiness as parents making the transition from employment into unemployment. For example, a move out of the labour force for the mother when the child is young is positively and statistically significantly correlated with child's happiness, whilst a move out of the labour force for the father is associated negatively albeit weakly with self-rated happiness scores for the youngest children in our sample. On the other hand, the decision to leave the labour force altogether for the father when the child is relatively older seems to have a positive contribution to the happiness of the child, which is a stark contrast to what had been found for the effect of paternal unemployment on the happiness of older children. More generally, we find that being completely out of the labour force for the parents may not have had the same detrimental impacts on child's happiness as parental unemployment. This may be because, for most people and especially those with dependent children, unemployment is involuntary; for example, it would be hard to imagine why parents of teenage children would characteristically select themselves to become unemployed. By contrast, parents may leave the labour force altogether for a variety of personal reasons that relatively older children can probably internalize and explain, e.g., leaving employment to pursue further education or to looking after home permanently, thus explaining why some children may even benefit psychologically from parents voluntarily choosing to leave the labour force.

3.2. Additional results: education attainment at age 16

Up to this point, this paper has concentrated on the estimation of the effects of past and present parental unemployment on children's happiness and self-esteem. Such an approach seems to be of some worth in its own right. However, question remains whether these changes in children's happiness with life overall at this stage of child development predict important child outcomes in the future. Should economists, for example, care about children's happiness at this stage of their life if it turns out that they do not predict anything of interest to policy makers, such as educational attainments and labor market outcomes?

Table 4 tests this by investigating whether average happiness with life scores and within-person changes in happiness between the age of 11 and 15 strongly predict academic qualification at aged 16. Here, the dependent variable of interest is the total number the General Certificate of Secondary Education (GCSE) or key stage 4 exams 'good' grades, i.e., A*-C. Additional controls include gender of the child, parental education, average family income across aged 11-15, regional and survey wave dummies. The model is estimated using OLS with robust standard error.

Looking at the first column of Table 4, we can see that the average happiness between aged 11 and 15 strongly predicts how well the child will do at the GCSE level. Controlling for parental education and average family income when the child was growing up, an increase of one standard deviation in the child's happiness increases the number of GCSEs passed with grades A*-C by approximately 0.48 subjects. This is a large effect; it is equal to almost one half of the gender difference.

One objection to the method of simply comparing children's academic outcomes at aged 16 by their average happiness measured between the age of 11 and 15 is that the individual fixed effects are ignored in the estimation process. Children who were born with personality traits that make them happy and/or contribute to them having a high self-esteem are also likely to be the same traits that make them more academically oriented than others (see, e.g., Baumeister et al., 2003). Taking the potential unobserved heterogeneity bias into account, Column 2 of Table 4 presents the estimates in which within-person changes in child's happiness with life at different ages are the independent variables of interest.

We can see that a change in child's happiness between age 11 and 12 is a strong predictor of obtaining good grades at the GCSE level. Holding child's happiness at 11 years old constant, a one unit increase in happiness between 11 and 12 years old is associated with an increase in the total number of GCSEs passed with

grade A*-C by 0.3 subjects; the coefficient *Linear Δ in happiness (age 11 to 12)* is 0.308, with a robust standard error of 0.142. The coefficients on linear changes in the child's happiness at latter stages of development are, however, not statistically significantly different from zero at any conventional confidence levels. On the other hand, a one unit increase in the average happiness level at age 11 is associated statistically significantly with an increase in the total number of GCSEs passed with 'good' grades by approximately 0.45 subjects.

The last four columns of Table 4 re-estimate the GCSE equations separately for boys and girls. What we find is that happiness with life is a significant predictor of future educational attainment for girls but not for boys. On average, a one unit increase in the average happiness with life score measured between age 11 and 15 is associated with an increase in the total number of GCSEs passed with 'good' grades at the age of 16 by 0.56 subjects for girls, which is equivalent to around one third of the effect of having a father who completed at least a first degree by the time the child is 15 years old.

Table 4 thus provides some initial evidence that a measure of child's happiness with life is a potentially useful indicator of future life successes. Added to the previous findings on the effects of parental unemployment on child's happiness, Table 4's results offer an additional psychological explanation that is not based on human capital accumulation of early academic achievements. However, care must be taken when reading off these reduced form coefficients, and no causal inferences can currently be made of these relatively small sample size estimates. Future studies will have to come back to identify the causal links between parental unemployment, measures of psychological well-being of the child, and child's education outcomes better than we are currently able to do.

6. Conclusions

The current study explores the longitudinal relationship between parental unemployment and children's overall happiness during their formative years. Using a unique nationally representative sample of British youths, we first demonstrate that there is statistically insignificant association between parental job loss and children's overall happiness, holding age of the child and other things constant. We later find that this is due in part to the heterogeneous relationship between parental

unemployment and child's happiness that varies by the age of the child. More specifically, we find some evidence that an onset of paternal and maternal unemployment may have had a positive psychological influence on the youngest children in our sample. For older children, the estimated relationship between parental unemployment and happiness with life is either statistically insignificantly different from zero or strongly negative, depending on the age of the child and whether it is paternal or maternal unemployment. Moreover, there is evidence that the youngest boys (girls) in our sample may have even benefitted psychologically from an onset of maternal (paternal) unemployment, although the implied effect of a long-term paternal unemployment on children's overall happiness is estimated to be negative, sizeable, and statistically significant in most cases for girls and not for boys. And finally, we are able to show that adolescents' happiness can explain actual school performance, i.e. GCSE results, thus implying that changes in children's overall happiness are not meaningless and that their correlates are worth studying.

While many empirical studies generally find that parental inputs contribution in child development declines significantly with age, our estimation results seem to suggest that adolescents' psychological well-being may still be malleable through changes in parental life circumstances. For instance, the implied psychological effect of maternal unemployment is at its most negative and statistically most robust when the child is 15 years old, whilst the effect of a long-term paternal unemployment on children's happiness can build up to become negative and statistically significant over the years. In other words, what our estimation results imply is that there may be more scope for policy interventions to improve the psychological well-being of adolescents living in an unemployed household than may have been previously realised. Future studies should, however, return to address the potential endogenous effect of parental unemployment on children's happiness more properly by using, for example, parents' exposure to plant closure as Rege et al. (2011) as an identification strategy, or by employing other empirical strategies such as sibling fixed effects to factor out the common family effects as in Ermisch and Francesconi (2013).

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Table 1: Average changes in children's overall happiness by changes in parental employment status between *t*-1 and *t*.

		Father in employment in *t*	Unemployed father in *t*
Father in employment in *t*-1	M	-0.075	-0.180
	(S.E.)	(0.034)	(0.184)
	N	**1,391**	**50**
Unemployed father in *t*-1	M	0.098	-0.023
	(S.E.)	(0.093)	-(0.018)
	N	**41**	**44**
		Mother in employment in *t*	**Unemployed mother in *t***
Mother in employment in *t*-1	M	-0.063	-0.083
	(S.E.)	(0.034)	(0.390)
	N	**1,328**	**24**
Unemployed mother in *t*-1	M	-1.000	0.000
	(S.E.)	(0.324)	(0.816)
	N	**15**	**7**

Note: Children's happiness with life scores are on a 7-point scale, ranging from 1 = "completely unhappy" to 7 = "completely happy". M = mean of change in children's overall happiness between t-1 and t. S.E. = standard errors. N = number of observations.

Figure 1: Average children's overall happiness across different parental employment status and ages of the child

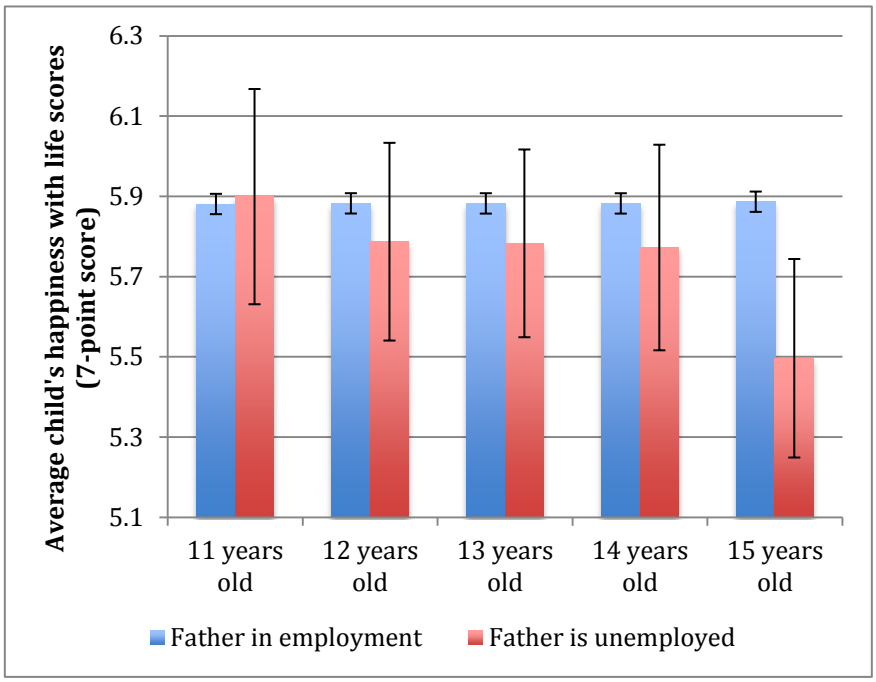

Figure 1a: Paternal unemployment

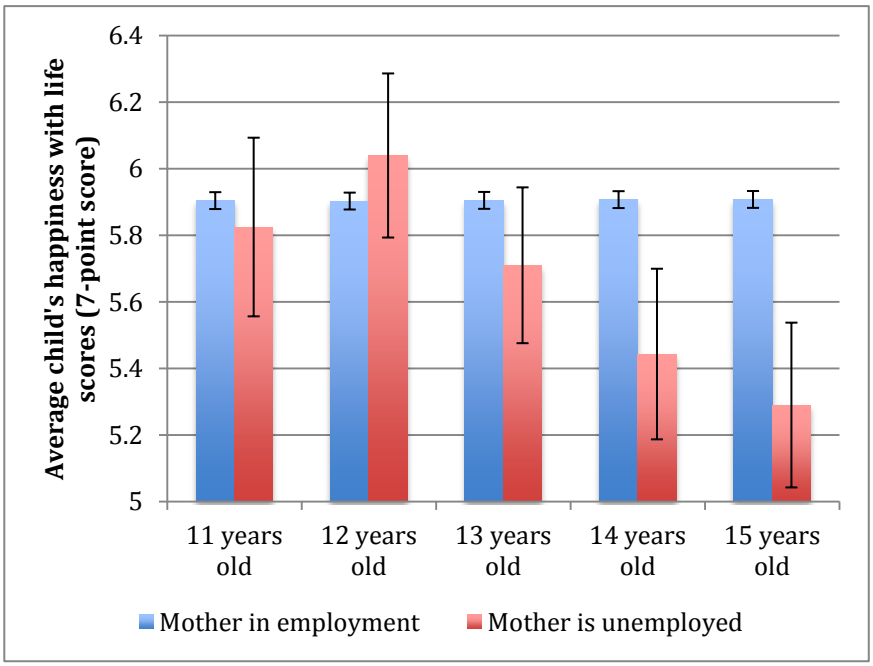

Figure 1b: Maternal unemployment

Note: These are raw data; they are not regression-adjusted. 4-standard-error bands (95% C.I.) are reported: two s.e. above and two below.

Table 2: Children's overall happiness regression equations, BHPS Youth 1994-2008

Dependent variable: **Children's happiness with life scores**	**RE** **(1)**	**FE** **(2)**	**FE** **(3)**	**FE** **(4)**	**FE** **(5)**	**CLogit** **(6)**
Father unemployed	-0.0384	0.0887	0.345***	0.335**	0.231*	0.804
	[0.0539]	[0.0691]	[0.131]	[0.136]	[0.126]	[0.583]
Youth's age: 12	-0.00415	0.0338	0.0522	0.0727	0.0932	0.170
	[0.0306]	[0.0652]	[0.0657]	[0.0694]	[0.0617]	[0.322]
Youth's age: 13	-0.118***	-0.0321	-0.0123	0.0317	0.0832	0.124
	[0.0314]	[0.120]	[0.120]	[0.128]	[0.113]	[0.583]
Youth's age: 14	-0.182***	-0.0697	-0.0320	0.0352	0.0958	0.0124
	[0.0325]	[0.177]	[0.177]	[0.189]	[0.168]	[0.855]
Youth's age: 15	-0.267***	-0.101	-0.0522	0.0421	0.121	0.154
	[0.0339]	[0.235]	[0.235]	[0.251]	[0.223]	[1.143]
Father unemployed × Youth's age: 12			-0.378**	-0.365**	-0.301**	-1.314*
			[0.156]	[0.157]	[0.148]	[0.671]
Father unemployed × Youth's age: 13			-0.0915	-0.0647	-0.0625	-1.341*
			[0.171]	[0.173]	[0.160]	[0.766]
Father unemployed × Youth's age: 14			-0.382**	-0.379**	-0.254	-1.536*
			[0.181]	[0.183]	[0.170]	[0.829]
Father unemployed × Youth's age: 15			-0.393**	-0.397**	-0.397**	-1.985***
			[0.177]	[0.179]	[0.167]	[0.716]
Mother unemployed	-0.105	-0.0196	0.200	0.226	0.276	0.357
	[0.0898]	[0.103]	[0.246]	[0.250]	[0.233]	[1.228]
Mother unemployed × Youth's age: 12			0.426	0.427	0.252	1.717
			[0.324]	[0.326]	[0.306]	[1.768]
Mother unemployed × Youth's age: 13			-0.291	-0.322	-0.266	-1.202

			[0.320]	[0.322]	[0.297]	[1.623]
Mother unemployed × Youth's age: 14			-0.395	-0.480	-0.589**	-1.050
			[0.307]	[0.310]	[0.284]	[1.443]
Mother unemployed × Youth's age: 15			-1.067***	-1.063***	-0.977***	-2.322
			[0.358]	[0.360]	[0.324]	[2.055]
The implied effects of 5 years of parental unemployment						
Father unemployed from age 11 to 15 ($\beta + \sum_{a=12}^{15} \varphi_a$)			*-0.899***	*-0.871**	*-0.783**	*-5.372****
			[0.447]	*[0.453]*	*[0.424]*	*[1.987]*
Mother unemployed from age 11 to 15 ($\gamma + \sum_{a=12}^{15} \theta_a$)			*-1.127*	*-1.212*	*-1.303*	*-2.500*
			[0.862]	*[0.866]*	*[0.800]*	*[4.463]*
Exogenous variables	Yes	Yes	Yes	Yes	Yes	Yes
Individual fixed effects	No	Yes	Yes	Yes	Yes	Yes
Parental characteristics	No	No	No	Yes	Yes	Yes
Child's experiences at home and school	No	No	No	No	Yes	Yes
N (Observations)	11,415	11,415	11,415	11,341	10,668	2,769
n (Individuals)	3,675	3,675	3,675	3,664	3,500	709

Note: *<10%; **<5%; ***<1%. Standard errors are in parentheses. RE = random effects linear regression estimators. FE = within-child or individual fixed effects estimators. CL = conditional logit estimator. For CL regression, the child's happiness score is converted into (0,1) dummy for having scored 5 or higher on the seven-point happiness scale and used as the dependent variable. For estimates of the control variables, see Appendix B.

Table 3: Fixed effects happiness regressions by child's gender

Dependent variable: **Children's happiness with life scores**	**Boys**	**Girls**
Father unemployed	-0.0250	0.477***
	[0.179]	[0.180]
Youth's age: 12	0.119	0.0528
	[0.0860]	[0.0892]
Youth's age: 13	0.143	-0.00618
	[0.158]	[0.164]
Youth's age: 14	0.165	-0.0141
	[0.234]	[0.243]
Youth's age: 15	0.154	0.0296
	[0.311]	[0.324]
Father unemployed × Youth's age: 12	-0.0282	-0.504**
	[0.219]	[0.203]
Father unemployed × Youth's age: 13	0.195	-0.289
	[0.237]	[0.220]
Father unemployed × Youth's age: 14	0.0817	-0.549**
	[0.247]	[0.238]
Father unemployed × Youth's age: 15	-0.187	-0.536**
	[0.233]	[0.243]
Mother unemployed	0.664*	-0.0830
	[0.341]	[0.322]
Mother unemployed × Youth's age: 12	-0.0225	0.341
	[0.440]	[0.433]
Mother unemployed × Youth's age: 13	-0.935**	0.343
	[0.424]	[0.421]
Mother unemployed × Youth's age: 14	-0.998**	-0.344
	[0.401]	[0.410]
Mother unemployed × Youth's age: 15	-1.058**	-1.070**
	[0.447]	[0.482]
The implied effects of 5 years of parental unemployment		
Father unemployed from age 11 to 15 ($\beta + \sum_{a=12}^{15} \varphi_a$)	0.036	-1.402**
	[0.620]	[0.589]
Mother unemployed from age 11 to 15 ($\gamma + \sum_{a=12}^{15} \theta_a$)	-2.349**	-0.813
	[1.146]	[1.144]
N (Observations)	5,439	5,229
n (Individuals)	1,803	1,697

Note: *<10%; **<5%; ***<1%. Standard errors are in parentheses. Same control variables as in Table 2.

Table 4: Do measures of children's happiness and self-esteem predict educational attainment at age 16?

Dependent variable:	**All**		**Boys**		**Girls**	
Total number of GCSEs with 'good' grades (A*-C) at 16	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Average happiness (age 11-15)	0.477***		0.336		0.560***	
	[0.150]		[0.232]		[0.211]	
Happy with life score at age 11		0.455***		0.331		0.531**
		[0.150]		[0.231]		[0.212]
Linear Δ in happiness (age 11 to 12)		0.308**		0.0408		0.416**
		[0.142]		[0.229]		[0.200]
Linear Δ in happiness (age 12 to 13)		0.172		0.0711		0.195
		[0.144]		[0.223]		[0.203]
Linear Δ in happiness (age 13 to 14)		0.0987		0.172		-0.0164
		[0.128]		[0.187]		[0.187]
Linear Δ in happiness (age 14 to 15)		-0.107		-0.0527		-0.188
		[0.103]		[0.158]		[0.152]
Girls	0.952***	0.928***				
	[0.247]	[0.249]				
Average log of household income (aged 11-15)	1.184***	1.184***	0.923**	0.936**	1.335***	1.335***
	[0.290]	[0.290]	[0.399]	[0.400]	[0.435]	[0.433]
Father completed O-level but lower than first degree at 15	1.533***	1.506***	1.673***	1.579***	1.501***	1.472***
	[0.318]	[0.318]	[0.464]	[0.467]	[0.464]	[0.463]
Father completed first degree or higher at 15	2.305***	2.260***	2.885***	2.831***	1.831**	1.716**
	[0.526]	[0.527]	[0.714]	[0.716]	[0.846]	[0.855]
Mother completed O-level but lower than first degree at 15	0.877***	0.888***	0.709*	0.709*	1.077***	1.087***
	[0.281]	[0.280]	[0.399]	[0.397]	[0.412]	[0.413]
Mother completed first degree or higher at 15	0.601	0.597	-0.0362	-0.105	1.189	1.289*
	[0.501]	[0.502]	[0.660]	[0.659]	[0.778]	[0.769]
Observations	1,022	1,022	516	516	506	506
R-squared	0.238	0.241	0.245	0.253	0.264	0.271

Note: *<10%; **<5%; ***<1%. Other controls include regional and survey wave dummies. Standard errors are in parentheses

Appendix A: Frequencies of parental unemployment in the sample

	Overall		Between Person	
Father unemployed	***Freq.***	***%***	***Freq.***	***%***
Once	235	42.81	235	64.56
Twice	162	29.51	82	22.53
Three times	113	20.58	38	10.44
Four times	24	4.37	6	1.65
All five waves	15	2.73	3	0.82
Total	549	100	364	100
Mother unemployed	***Freq.***	***%***	***Freq.***	***%***
Once	121	75.63	121	86.43
Twice	33	20.63	17	12.14
Three times	6	3.75	2	1.43
Total	160	100	140	100

Appendix B: Estimates of the control variables in Table 2

Dependent variable: **Children's happiness with life scores**	**FE** **(4)**	**FE** **(5)**
Parental characteristics		
Ln(household income)	0.0362	0.0105
	[0.0362]	[0.0325]
Father self-employed	0.105	0.0897
	[0.0671]	[0.0599]
Father retired	0.139	0.111
	[0.185]	[0.165]
Father disabled	-0.0212	0.0114
	[0.113]	[0.100]
Father non-labour	-0.0166	-0.0336
	[0.122]	[0.108]
Mother self-employed	0.0578	0.0450
	[0.0868]	[0.0775]
Mother retired	0.0382	-0.212
	[0.306]	[0.274]
Mother disabled	0.0126	0.0385
	[0.109]	[0.0961]
Mother non-labour	0.0649	0.104**
	[0.0514]	[0.0462]
Father completed first degree or higher	0.401	0.431*
	[0.279]	[0.257]
Father completed O-level but lower than first degree	-0.0224	-0.0421
	[0.0971]	[0.0870]
Mother completed first degree or higher	0.279	0.274
	[0.195]	[0.174]
Mother completed O-level but lower than first degree	0.108	0.0494
	[0.117]	[0.104]
Father's health: good	0.0137	-0.0211
	[0.0346]	[0.0309]
Father's health: fair	-0.00268	-0.0223
	[0.0467]	[0.0416]
Father's health: poor	0.0109	-0.0111
	[0.0693]	[0.0618]
Father's health: very poor	0.0159	0.0746
	[0.117]	[0.104]
Mother's health: good	0.0118	0.00744
	[0.0364]	[0.0325]
Mother's health: fair	0.0726	0.0591
	[0.0470]	[0.0420]
Mother's health: poor	0.0153	-0.0334
	[0.0671]	[0.0598]

Mother's health: very poor	0.0125	-0.0639
	[0.106]	[0.0938]
Parents are living as a couple	-0.132	-0.0894
	[0.100]	[0.0906]
Parents are divorced	0.0817	0.0172
	[0.279]	[0.249]
Parents are separated	0.233	0.324
	[0.291]	[0.268]
Father's age	-3.737***	-2.250*
	[1.240]	[1.234]
Father's mental distress (GHQ-12)	-0.00111	-0.00166
	[0.00248]	[0.00221]
Mother's mental distress (GHQ-12)	-0.00308	-0.00385*
	[0.00239]	[0.00213]
Father's age	0.00500	0.0123
	[0.0193]	[0.0178]
Mother's age	-0.0175	-0.0128
	[0.0137]	[0.0119]
Number of siblings aged 11-15	-0.0425*	-0.00561
	[0.0247]	[0.0221]
Youth's experiences at home and at school		
Fear of being bullied at school: moderate		-0.0577**
		[0.0268]
Fear of being bullied at school: high		-0.199***
		[0.0506]
Fought with someone last month: once		-0.0114
		[0.0300]
Fought with someone last month: 2-5 times		-0.119***
		[0.0426]
Fought with someone last month: 6-9 times		-0.275***
		[0.0973]
Fought with someone last month: 10 or more times		-0.389***
		[0.0923]
Happy with friends		0.182***
		[0.0133]
Happy with appearance		0.222***
		[0.0100]
Happy with school work		0.109***
		[0.0102]
Happy with family		0.269***
		[0.0126]
Talk to mum about things that matter: less than once a week		0.0489
		[0.0346]
Talk to mum about things that matter: more than once a week		0.0534
		[0.0385]
Talk to mum about things that matter: on most days		0.0273

		[0.0414]
Talk to dad about things that matter: less than once a week		0.0177
		[0.0313]
Talk to dad about things that matter: more than once a week		0.0370
		[0.0387]
Talk to dad about things that matter: on most days		0.0987**
		[0.0454]
Number of close friends: 6-10		0.0510**
		[0.0256]
Number of close friends: more than 10		0.0281
		[0.0353]
Number of close friends: no close friends		-0.0385
		[0.0898]
Exogenous variables	Yes	Yes
Individual fixed effects	Yes	Yes
Parental characteristics	Yes	Yes
Child's experiences at home and school	Yes	Yes
N (Observations)	11,341	10,668
n (Individuals)	3,664	3,500

Note: *<10%; **<5%; ***<1%. Standard errors are in parentheses.

Appendix C: Estimated effects of parental unemployment at different ages

Estimated effects of paternal unemployment at different ages	**Combined effect ($\beta + \varphi_a$)**		
	All	**Boys**	**Girls**
Father unemployed at age 11	0.231*	-0.025	0.476***
	[0.126]	[0.179]	[0.180]
Father unemployed at age 12	-0.069	-0.053	-0.027
	[0.108]	[0.160]	[0.148]
Father unemployed at age 13	0.168	0.169	0.187
	[0.119]	[0.180]	[0.163]
Father unemployed at age 14	-0.022	0.056	-0.072
	[0.130]	[0.188]	[0.182]
Father unemployed at age 15	-0.165	-0.212	-0.059
	[0.123]	[0.170]	[0.180]
Estimated effects of maternal unemployment at different ages	**Combined effect ($\gamma + \theta_a$)**		
	All	**Boys**	**Girls**
Mother unemployed at age 11	0.276	0.664**	-0.083
	[0.233]	[0.340]	[0.322]
Mother unemployed at age 12	0.528***	0.642**	0.258
	[0.206]	[0.280]	[0.310]
Mother unemployed at age 13	0.011	-0.271	0.259
	[0.188]	[0.258]	[0.275]
Mother unemployed at age 14	-0.313*	-0.333	-0.427*
	[0.168]	[0.222]	[0.260]
Mother unemployed at age 15	-0.700***	-0.393	-1.153***
	[0.232]	[0.304]	[0.362]

Note: *<10%; **<5%; ***<1%. Standard errors are in parentheses

Appendix D: Fixed effects happiness regressions with a balanced panel

	All	Boys	Girls
Father unemployed	0.185	-0.243	0.643***
	[0.167]	[0.241]	[0.242]
Youth's age: 12	0.0930	0.0941	0.0619
	[0.0963]	[0.147]	[0.129]
Youth's age: 13	0.0663	0.0280	0.0330
	[0.185]	[0.285]	[0.247]
Youth's age: 14	0.0792	-0.00275	0.0717
	[0.275]	[0.423]	[0.366]
Youth's age: 15	0.0413	-0.102	0.0631
	[0.366]	[0.563]	[0.487]
Father unemployed × Youth's age: 12	-0.426**	-0.0773	-0.714**
	[0.209]	[0.302]	[0.295]
Father unemployed × Youth's age: 13	-0.0558	0.493	-0.569*
	[0.239]	[0.376]	[0.321]
Father unemployed × Youth's age: 14	-0.318	-0.148	-0.540
	[0.251]	[0.373]	[0.345]
Father unemployed × Youth's age: 15	-0.412*	-0.216	-0.775**
	[0.227]	[0.323]	[0.329]
Mother unemployed	0.307	0.671	0.0727
	[0.305]	[0.480]	[0.398]
Mother unemployed × Youth's age: 12	0.275	-0.0918	0.384
	[0.449]	[0.632]	[0.706]
Mother unemployed × Youth's age: 13	-0.186	-0.805	0.316
	[0.446]	[0.687]	[0.591]
Mother unemployed × Youth's age: 14	-0.685*	-1.027*	-0.886
	[0.404]	[0.563]	[0.690]
Mother unemployed × Youth's age: 15	-0.822*	-0.849	-1.186*
	[0.428]	[0.608]	[0.640]
The implied effects of 5 years of parental unemployment			
Father unemployed from age 11 to 15 ($\beta + \sum_{a=12}^{15} \varphi_a$)	-1.028*	-0.191	-1.955**
	[0.591]	[0.886]	[0.818]
Mother unemployed from age 11 to 15 ($\gamma + \sum_{a=12}^{15} \theta_a$)	-1.111	-2.102	-1.299
	[1.096]	[1.638]	[1.582]
N (Observations)	5,381	2,663	2,718
n (Individuals)	1,218	606	612

Note: *<10%; **<5%; ***<1%. Standard errors are in parentheses. Same control variables as in Table 2.

Appendix E: Fixed effects happiness regressions with interactions with non-labour market status

	All	Boys	Girls
Father unemployed	0.198	-0.0136	0.394**
	[0.128]	[0.181]	[0.183]
Youth's age: 12	0.107*	0.0955	0.104
	[0.0640]	[0.0894]	[0.0923]
Youth's age: 13	0.0868	0.0851	0.0592
	[0.115]	[0.160]	[0.166]
Youth's age: 14	0.111	0.115	0.0776
	[0.169]	[0.235]	[0.244]
Youth's age: 15	0.123	0.102	0.0967
	[0.224]	[0.312]	[0.325]
Father unemployed × Youth's age: 12	-0.277*	-0.0375	-0.443**
	[0.150]	[0.221]	[0.207]
Father unemployed × Youth's age: 13	-0.0362	0.153	-0.201
	[0.162]	[0.239]	[0.223]
Father unemployed × Youth's age: 14	-0.213	0.0341	-0.400*
	[0.173]	[0.250]	[0.242]
Father unemployed × Youth's age: 15	-0.348**	-0.181	-0.434*
	[0.169]	[0.236]	[0.246]
Mother unemployed	0.275	0.643*	-0.0674
	[0.233]	[0.341]	[0.322]
Mother unemployed × Youth's age: 12	0.259	-0.00124	0.323
	[0.306]	[0.440]	[0.433]
Mother unemployed × Youth's age: 13	-0.270	-0.889**	0.307
	[0.297]	[0.424]	[0.421]
Mother unemployed × Youth's age: 14	-0.597**	-0.959**	-0.408
	[0.284]	[0.402]	[0.411]
Mother unemployed × Youth's age: 15	-0.976***	-1.037**	-1.089**
	[0.324]	[0.448]	[0.483]
Father non-labour (e.g. student, training, etc.)	-0.360*	-0.472*	-0.157
	[0.194]	[0.250]	[0.314]
Father non-labour × Youth's age: 12	0.113	0.378	-0.285
	[0.217]	[0.279]	[0.347]
Father non-labour × Youth's age: 13	0.434**	0.717**	0.136
	[0.213]	[0.280]	[0.334]
Father non-labour × Youth's age: 14	0.237	0.376	0.0912
	[0.217]	[0.281]	[0.344]
Father non-labour × Youth's age: 15	0.757***	0.934***	0.586
	[0.236]	[0.311]	[0.372]
Mother non-labour (e.g. student, training, etc.)	0.157**	-0.00352	0.278***
	[0.0671]	[0.0933]	[0.0973]
Mother non-labour × Youth's age: 12	-0.0691	0.0445	-0.158
	[0.0711]	[0.0993]	[0.103]

Mother non-labour × Youth's age: 13	-0.0529	0.143	-0.226**
	[0.0742]	[0.105]	[0.106]
Mother non-labour × Youth's age: 14	-0.0869	0.130	-0.316***
	[0.0776]	[0.108]	[0.112]
Mother non-labour × Youth's age: 15	-0.0741	0.0450	-0.196
	[0.0828]	[0.115]	[0.120]
The implied effects of 5 years of parental unemployment			
Father unemployed from age 11 to 15	-0.676	-0.045	-1.085*
	[0.429]	[0.626]	[0.599]
Mother unemployed from age 11 to 15	-1.309	-2.244**	-0.935
	[0.801]	[1.147]	[1.145]
The implied effects of 5 years of parental non-labour status			
Father inactive in the labour force from age 11 to 15	1.182**	1.933***	0.371
	[0.586]	[0.763]	[0.929]
Mother inactive in the labour force from age 11 to 15	-0.126	0.359	-0.617**
	[0.206]	[0.288]	[0.298]
N (Observations)	10,668	5,439	5,229
n (Individuals)	3,500	1,803	1,697

Note: *<10%; **<5%; ***<1%. Non-labour market statuses include family care/housewife, full-time student, maternity leave, and government training scheme (and excluding retirement and disability). Standard errors are in parentheses. Same controls as in Table 2.