

# Teenage conduct problems: a lifetime of disadvantage in the labour market?

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## Abstract

Using data from British cohorts born in 1958 and 1970, we used quantile regression to investigate the impact of ‘mild’ and ‘severe’ teenage conduct problems on months spent in paid employment or paid employment, education, and training (EET) between ages 17 and 42. Those with conduct problems spent significantly less time in employment or EET by age 42. The penalty grows in one’s 20s and tends to persist thereafter. Among men, the participation gap was greatest among those with ‘severe’ teenage conduct problems and among those in the lower half of the participation distribution. There was no participation penalty arising from teenage conduct problems among the older generation of men in the top quartile of the participation distribution. Among women, conduct problems were associated with less time in employment and EET across the whole distribution of the participation distribution, and these penalties were greatest for women in the younger 1970 cohort.

**JEL classifications:** I12, J20, J64

## 1. Introduction

People with behavioural or mental health problems experience high levels of stigmatization and discrimination (Henderson and Thornicroft, 2009; Mehta *et al.*, 2009; Corker *et al.*, 2013) and face substantial economic disadvantage. Having behavioural problems in childhood or adolescence can cast a long shadow on a wide range of outcomes over the life course, including educational attainment, employment, wages, income, and early mortality (Palloni, 2006; Parks *et al.*, 2006; Goodman *et al.*, 2011; Egan *et al.*, 2015).

We revisit this issue by examining the impact of conduct problems at age 16 on time spent in employment, and time spent in employment, education, and training (EET), between ages 17 and 42, thus allowing us to consider whether any effects persist into mid-life. We investigate the issue for two British birth cohorts born 12 years apart in 1958 and 1970 where conduct problems were measured in an identical fashion. A priori, we might anticipate negative effects of conduct problems on subsequent labour market experiences in both cohorts, in part because conduct problems might directly influence labour market success—if, for example, they persist into adulthood and affect workers’ job search, job offers, work relationships, or productivity—and indirectly via educational attainment at the end of compulsory education, which was age 16 for members of these cohorts.

There is an extensive literature linking non-cognitive skills to labour market success (e.g., Heckman, 2006; Heckman and Kautz, 2012). Deming (2017) suggests labour market developments have led to increasing returns to non-cognitive social skills relative to academic and cognitive skills. We focus on one aspect of these non-cognitive skills, namely conduct problems in adolescence, to establish how they affect labour market participation by sex and across generations.

We contribute to the literature in four ways. First, we identify the cumulative effect of adolescent behavioural problems on subsequent labour market experiences through to age 42—what might be thought of as maturity in the labour market. Second, we show how labour market disadvantage associated with adolescent behavioural problems develops over the life course. Third, we compare effects across generations, taking advantage of identical measures of conduct problems in two birth cohorts (Rutter *et al.*, 1970; Richards *et al.*, 2009). Fourth, we use quantile regression to compare effects of conduct problems at the 0.25, 0.50, and 0.75 centiles of the labour market experience distributions. This is important given the skewed distribution of time spent in employment and EET in the data, and because the effects of conduct problems differ in different parts of the distribution of labour market experience.

We find that for men and women in both cohorts, gaps in participation emerge early and persist over time, with conduct problems—both mild and severe—having most impact among those in the bottom quartile of the labour market participation distribution. For men in the older 1958 cohort, we find no participation penalty arising from teenage behavioural problems for those in the top quartile of the participation distribution. Among women, on the other hand, conduct problems were associated with less time in employment and EET across the whole distribution of the participation distribution, and these penalties were greatest for women in the younger 1970 cohort.

The remainder of the article is structured as follows. Section 2 reviews the existing literature; Section 3 describes the data before detailing our key measures in Section 4 and presenting the results in Section 5. A discussion of results follows in Section 6, including implications for policy and limitations of the study.

## 2. Previous literature

### 2.1 Prevalence of adolescent behaviour and mental health problems

Increasing numbers of children and young people experience behavioural and mental health problems (Green *et al.*, 2005; Smith and Smith, 2010; Patalay and Gage, 2019; Pitchforth *et al.*, 2019). Roughly one in eight children and young people in the UK have mental health problems (NHS Digital, 2018) and psychiatric disorders in young people are increasingly prevalent (Collishaw *et al.*, 2004; Borschmann *et al.*, 2017; Borschmann and Kinner, 2019). In the US estimates for 2016–2019 suggest 1 in 11 (8.9%) children between ages 3 and 17 have been diagnosed with behaviour problems (Bitsko *et al.*, 2022), whereas globally, the World Health Organization (WHO) estimate that 1 in 7 (14%) 10–19-year-olds experience mental health conditions, whereas specific conduct disorder problems (involving symptoms of destructive or challenging behaviour) occur less frequently: 3.6% of 10–14 year olds and 2.4% of 15–19 year olds (WHO, 2021).

As the literature often treats behavioural and mental health problems synonymously, we include research that refers to both in the review below but focus on conduct or antisocial problems when looking at the relationship with economic activity. In the two British birth cohorts utilized in this research, participants have had their emotional and behavioural problems assessed using the same established scales during their childhood and adolescence (Rutter *et al.*, 1970).

## 2.2 Association with labour market participation

Studies examining the specific relationship between conduct problems and economic activity suggest behaviour problems in childhood or adolescence lead to greater risk of unemployment and joblessness in adulthood. The literature uses antisocial, conduct, and behaviour problems interchangeably, but the literature is largely based on the Rutter scale question responses (discussed later), either independently or in conjunction with responses to other questions. We use ‘conduct problems’ for consistency when discussing research using the Rutter scale below, much of which is based on the British 1958 and 1970 cohorts we use in our analyses.

[Richards \*et al.\* \(2009\)](#) find that in both the 1958 and 1970 cohorts mild and severe adolescent conduct problems at age 16 were associated with significantly elevated odds of experiencing a period of chronic economic inactivity for men and women between ages 16 and 33 or 16 and 34 (both cohorts) and 34 and 46 (1958 cohort). The one exception was for women with severe conduct problems in the 1958 cohort between 16 and 33. Using the 1970 birth cohort, [Feinstein \(2000\)](#) found conduct problems at age 10 predicted being unemployed for at least 4 months by age 26. Among those with at least 4 months unemployment it also predicted longer-term unemployment (of 12 or more months), but only for men. A sex difference was also apparent in the study by [Knapp \*et al.\* \(2011\)](#) which used the same 1970 birth cohort: men with conduct problems at age 10 were less likely to be economically active at age 30 compared with men without such problems but conduct problems at age 10 were not linked to labour market participation in adulthood among women. However, using the same dataset, [Clark and Lepinteur \(2019\)](#) found behaviour problems at age 16 were associated with unemployment at age 30 and the total amount of unemployment experienced up to age 30 for both men and women.

Differences in results across these studies are likely to reflect differences in the way behaviour problems were derived, the age at which behaviour problems were recorded, and the age at which outcomes were assessed. For example, the studies reviewed earlier indicate that conduct problems at age 10 in 1970 British Cohort Study (BCS70) are not correlated with subsequent labour market outcomes in the same way as conduct problems measured at age 16. This may be because those problems may have diminished by the time cohort members entered the labour market. Although all the cited studies only include controls which pre-date labour market entry (an approach adopted here) differences may nevertheless reflect differences in the conditioning variables entering the models.

Research using other data sources in the UK and elsewhere finds an association between conduct problems and subsequent poor labour market outcomes. For instance, [Healey \*et al.\* \(2004\)](#) analysed the Cambridge Study in Delinquent Development ([Farrington, 1995](#)) and found men with antisocial ‘troublesome’ traits at an early age experienced long periods of time out of the workforce up to age 32 (this research did not include women). [Kokko and Pulkkinen \(2000\)](#) found aggressive behaviour at age 8 was associated with long-term unemployment between ages 27 and 36 in Finland. In New Zealand, conduct problems measured via the Rutter Scale questions between ages 7 and 9 years were found to increase the risk of youth unemployment between ages 15 and 21 ([Caspi \*et al.\*, 1998](#)). Conduct problems measured at age 11 via the Strengths and Difficulties scale (itself based in part on the Rutter Questionnaire, see [Goodman, 1997, 2001](#)) were associated with not being in EET in early adulthood (age 22) in both England and Brazil ([Hammerton \*et al.\*, 2019](#)).

Not all studies conclude that conduct problems affect subsequent labour market outcomes. Two studies find the association between conduct problems and unemployment is completely attenuated when controlling for confounding factors. Using the same longitudinal dataset as [Caspi \*et al.\* \(1998\)](#), but at a later time point, [Fergusson \*et al.\* \(2005\)](#) found those with conduct problems in New Zealand had no greater experience of being

unemployed for a 12-month period between ages 21 and 25. They did find a raw correlation, but this was largely explained by the strong relationship between conduct problems, intelligence quotient (IQ), and attention problems which were themselves strongly associated with unemployment. The second study by [Colman \*et al.\* \(2009\)](#) used data from the 1946 British cohort study and found those with mild or severe conduct problems in adolescence were no more likely than their peers to have experienced one episode of unemployment at age 36, 43, or 53. However, when including interaction terms between conduct problems and sex, they did find some evidence to suggest men with severe conduct problems were more at risk of having been unemployed.

Taken together, these studies suggest that behaviour problems in childhood or adolescence are negatively associated with economic activity through adulthood, with the effects being clearer in the case of men. We contribute to this literature by looking at the effects of severe and mild behavioural problems in adolescence on labour market experiences in adulthood, right through to age 42, for men and women separately across two birth cohorts. In doing so we shed light on conflicting evidence regarding effects of conduct problems on women's economic activity by looking at how their attachment to the labour market varies by teenage conduct problems over the childbearing years into their early 40s, and how exits and returns to the labour market following childbearing vary across generations.

### 3. Research questions

Using longitudinal data from two British birth cohorts born 12 years apart, we adopt a life-course perspective to examine the role of conduct problems in adolescence on employment and EET through to age 42. Using identical measures of conduct problems ([Rutter \*et al.\*, 1970](#)), and exploiting detailed economic activity history data in the 1958 National Child Development Study (NCDS) and the BCS70, we explore how conduct problems relate to months spent in employment or EET between ages 17 and 42.

We begin by establishing the degree to which teenage conduct problems lead men and women to spend less time in employment or EET than their counterparts without identified conduct problems, cognisant of the fact that some prior studies find effects are more concentrated among men. We establish how the labour market disadvantage associated with conduct problems develops over the life course to see whether effects are persistent over time—as might be the case if young people are ‘scarred’ by their initial conduct problems—or whether any participation penalty diminishes with time, as might be the case if those effects are directly attributable to conduct problems which are absent later in life. We examine one potential mechanism by which conduct problems may disadvantage individuals in the labour market, namely whether any participation penalty associated with teenage conduct problems diminishes when conditioning on educational attainment at the end of compulsory education. This analysis is motivated by the possibility that a prime channel by which teenage conduct problems may affect subsequent labour market success is through poor academic attainment, given previous research has shown that those with teenage conduct problems are more likely to leave school with no qualifications ([Colman \*et al.\*, 2009](#); [Richards \*et al.\*, 2009](#)). Finally, we run all of these analyses in parallel for the two cohorts to see whether penalties attached to poor conduct have risen over time, a finding that would be consistent with [Deming \(2017\)](#) assertion that labour market returns to non-cognitive skills are increasing.

## 4. Data and samples

### 4.1 The 1958 NCDS

The 1958 cohort follows all those born in 1 week in England, Scotland, and Wales in 1958 ([Power and Elliott, 2006](#); <http://www.cls.ucl.ac.uk/ncds>). We use data collected at birth and

in the subsequent three follow-up surveys from parents and cohort members when participants were aged 7, 11, and 16, as well as labour market outcome data also collected at ages 23, 33, and 42 (University of London, 2020a,c).

## 4.2 The BCS70

The 1970 cohort follows the lives of more than 17,000 people born in England, Scotland, and Wales in 1 week of 1970 (Elliott and Shepherd, 2006; <http://www.cls.ucl.ac.uk/bcs70>). We use information from the first four waves, from parents and cohort members when they were aged 0, 5, 10, and 16, together with labour market outcome data also collected at ages 30, 34, 38, and 42 (University of London, 2013, 2016a,b, 2020b, 2021).

Data on work and non-work activities lasting 1 month or more have been collected in all adult sweeps of the 1958 (from age 23) and 1970 (from age 26) cohorts, and subsequently merged into longitudinal datasets. The activity histories start from the age of 16 and continue until the interview date of the latest data sweep that each cohort member participated in. For each work and non-work activity, start and end dates are collected, together with whether the activity was full- or part-time. Gaps in the activity histories occur where a cohort member has not been present at all sweeps and/or where full activity data were not reported. These data are considered the gold standard of life-course data and have been widely used in research (e.g., Bynner and Parsons, 1997; Feinstein, 2000; Parsons *et al.*, 2011; Carpentieri *et al.*, 2017; Bryson *et al.*, 2020).

## 4.3 Missing data

Given the potential for biases arising due to differential sample attrition among those with behaviour problems, we use multiple imputation with chained equations (White *et al.*, 2011) to provide complete information for all those who were both included in the original birth surveys and were still alive at age 42 ( $n = 16,238$  in NCDS;  $n = 16,129$  in BCS70). We adopt Schafer's data augmentation approach (Schafer, 1997) under the assumption of 'missing at random' (MAR). To maximize the plausibility of the MAR assumption, we included a large set of auxiliary variables in our imputation model. In this instance, MAR implies that our estimates are valid if missingness is due to variables (auxiliary or substantive) that were included in our models (Mostafa *et al.*, 2020; Silverwood *et al.*, 2020). All reported analyses are averaged across 20 replications based upon Rubin's Rule for the efficiency of estimation under a reported degree of missingness across the whole data of around 0.20 (Little and Rubin, 2014). Analyses were carried out in Stata version 16 (StataCorp, 2019).

## 4.4 Conduct behaviour problems

We measure conduct problems at age 16 in both studies using the Rutter *parental questionnaire, or Child Scale A* (Rutter *et al.*, 1970; Elander and Rutter, 1996). In total, the scale comprises 31 descriptions of behaviour in three sections. Behavioural adjustment is measured on a three-category scale: Does not apply (0), Applies somewhat (1), and Certainly applies (2). Table 1 details the five (near) identical conduct behaviour questions used in this study to compare across birth cohorts.

After running exploratory factor analysis in MPlus (version 8, Muthén and Muthén, 1998–2017) on the five items, we tested whether parents in both cohorts interpreted a question in a conceptually similar manner by checking for measurement invariance. We found both metric and scalar invariance which allows us to compare both regression coefficients of associations between conduct problems and time in employment or EET and to compare mean conduct scores across cohorts.

We derived harmonized conduct scales for both cohorts by summing scores across questions, with a high score indicating higher problems. Scores ranged from 0 to 10 with a mean score of 0.63 in NCDS and 0.80 in BCS70. We categorized individuals into three

**Table 1.** Specific wording of conduct disorder questions in the Rutter scales completed by 1958 and 1970 cohort members parent/guardian at child age 16

Specific wording of question	NCDS	BCS70
Often destroys own or others' belongings.		✓
Often destroys own or others' property.	✓	
Frequently fights with others.		✓
Frequently fights or is extremely quarrelsome with other children.	✓	
Is often disobedient.	✓	✓
Often tells lies.	✓	✓
Bullies other children.	✓	
Bullies others.		✓

Source: Authors summary from online questionnaires. See <https://cls.ucl.ac.uk/cls-studies/>.

**Table 2.** Distribution across conduct behaviour groups by cohort and sex

	Men		Women	
	NCDS	BCS70	NCDS	BCS70
No problems [0]	62.0	55.9	65.8	60.8
Mild problems [1–2]	31.1	33.4	28.5	30.9
Severe problems [3+]	6.9	10.7	5.7	8.3
Unweighted N (100%)	8,315	8,237	7,923	7,891

Source: Authors calculations.

groups which echoed the approach used by Richards *et al.* (2009) and Colman *et al.* (2009): those with no problems, one or two problems ('mild'), or three or more problems ('severe'). Table 2 shows the distribution across conduct behaviour groups by cohort and sex. We confirm established findings that the incidence of problems is higher among males and females, and higher in more recent cohorts (Collishaw *et al.*, 2004; Borschmann *et al.*, 2017). Supplementary Appendix Table A1.1 presents the measurement invariance results and Supplementary Appendix Table A1.2 gives the prevalence of each conduct behaviour problem by minor or severe classification. This shows that disobedience, telling lies, and fighting are the most common 'problems' for children with minor or severe problems; relatively few children with minor conduct problems bully other children or destroy their belongings.

#### 4.5 Time in EET

We used economic activity history data to calculate the number of months an individual spent in paid employment or EET over the 26 years from January at the start of the calendar year they turned 17 to December of the year they turned 42. For the 1958 cohort, this was January 1975 to December 2000 and for the 1970 cohort, January 1987 to December 2012—a total of 312 months in both cases. We included a measure of time spent in EET as well as paid employment to account for the age an individual entered the labour market after leaving education and training, and the different labour market conditions faced by the two generations of school leavers.

As expected, men spent, on average, more of the available 312 months in paid employment compared with women in both cohorts, with women in the 1970 cohort spending more time in paid employment compared with women in the 1958 cohort (Table 3). When months in education and training were also taken into account, women in the 1970 cohort had spent, on average, 13 months more time in EET than women in the 1958 cohort, although there was more variation for women in the more recent cohort. This reflects the changes between cohorts, not only in women's increased attachment to the labour market,



**Table 3.** Mean number of months spent in employment and EET between ages 17 and 42 by cohort and sex

	Months employed 17–42		Months EET 17–42	
	NCDS Mean (se)	BCS70 Mean (se)	NCDS Mean (se)	BCS70 Mean (se)
Men	271 (0.70)	259 (2.03)	283 (0.65)	278 (2.07)
Women	218 (0.96)	224 (1.88)	232 (0.96)	245 (1.92)

Source: Authors calculations.

but also in the delays in childbirth and a reduction in the average number of children women had in the more recent cohort (Bryson *et al.*, 2020).

Men in the more recent 1970 cohort had spent, on average, 12 months less time in paid employment than the earlier cohort. The mean number of months men spent in EET was similar across cohorts, although again there was more variation among those in the younger cohort.

#### 4.6 Other child and family characteristics

We condition on a wide range of individual and family background characteristics that our review of the literature has shown to be associated with both behaviour problems and labour market outcomes. This enables us to identify how far any labour market disadvantage is driven by lower qualifications, disadvantaged personal characteristics, or social origins, thereby helping to establish any potential causal impact of conduct problems on labour market participation. The individual characteristics are sex, birth weight, birth order, breastfeeding and reading, and maths test scores in mid-childhood. We do not include ethnicity as the cohort members in both cohorts overwhelmingly identify as White British (97–98%), which is representative of the population born in Britain in one week in 1958 or 1970, albeit not of the population born in the same years living in Britain today due to immigration. Measures of family socio-economic circumstances are taken from the birth survey, or if not available, from when the measure was first asked. This included parental occupation social class, parents' age leaving full-time education, housing tenure, overcrowded living conditions, and family income.

Previous research has shown that those with conduct problems are more likely to fall behind academically in childhood and achieve fewer qualifications at school leaving (Colman *et al.*, 2009; McLeod *et al.*, 2012; Sayal *et al.*, 2015). Conduct problems have also been associated with poorer school attendance, truancy, suspension, or school expulsion (Evans, 2010; Gill *et al.*, 2017) which also have consequential impacts on academic attainment. These aspects of (lack of) school engagement have also been associated with delinquency, crime, and prison-time in different contexts (Berridge *et al.*, 2001; Williams *et al.*, 2012; Mowen and Brent, 2016; Mittleman, 2018), which can also impact on education attainment and later life consequences. Looking at data from the 1958 or 1970 cohorts collected retrospectively in 2000, we found that just 5% of the 1958 cohort and 10% of the 1970 cohort report having *ever* been suspended from school, with less than 2% of each study having been permanently excluded. During the academic year 2019/20 in England, the proportion of school pupils suspended was 3.8% with 0.1% being permanently excluded from school (UK Government, 2021). In relation to crime, just 5% of the 1958 and 13% of the 1970 cohort report ever being found guilty of a crime by a court of law, but we do not know the proportion of which went on to serve a prison sentence. However, in a British context very few teenagers have spent time in prison: in 2021 just 0.5% of the prison population in England and Wales were below age 18 (Sturge, 2021).

In our empirical investigation, we condition on educational attainment at age 16, which in a British context will subsume the effects of time out and disengagement with school. We measure attainment using public examination results which were collected from official records for NCDS cohort members and, for BCS70, from parents in 1986 and cohort member themselves when age 30 or 34. At the end of compulsory education, members of both cohorts in England and Wales sat either Ordinary Level (O Level) or Certificate of Secondary Education (CSE) examinations at age 16, those in Scotland Ordinary Grade (O Grade) examinations. We calculated the total number of 'good' O Level (Grades A–C), CSE (Grade 1), or O Grade (Grades A–C) examination passes that a cohort member achieved and if they had achieved a good pass in English and Maths.

#### 4.7 Analytic strategy

Table 4 shows the months spent in paid employment or EET by conduct problems for men and women separately. It is apparent that time spent in both paid employment and EET declines with the number of conduct problems cohort members faced at age 16, and that this is the case for both men and women in both birth cohorts.

**Table 4.** Mean months in employment or EET across percentiles by cohort, sex, and conduct score

	Men: NCDS					Men: BCS70				
	Employment									
	Mean	SD	P25	P50	P75	Mean	SD	P25	P50	P75
0	272	50.61	249	291	312	265	52.66	238	283	307
1–2	267	56.35	242	287	312	257	62.75	228	278	307
3+	251	68.32	214	274	309	239	76.72	203	203	301
Total	269	54.20	245	290	312	259	59.61	232	280	307
	EET									
	Mean	SD	P25	P50	P75	Mean	SD	P25	P50	P75
0	286	43.89	277	309	312	286	43.58	279	307	311
1–2	276	52.85	257	301	312	272	57.16	254	300	311
3+	256	66.19	223	280	312	251	73.63	219	279	308
Total	281	49.47	267	306	312	278	53.63	264	305	311
	Women: NCDS					Women: BCS70				
	Employment									
	Mean	SD	P25	P50	P75	Mean	SD	P25	P50	P75
0	219	69.22	176	229	274	230	67.64	190	242	288
1–2	210	74.25	163	219	268	218	75.21	172	231	282
3+	195	79.45	139	202	257	195	85.68	135	204	268
Total	215	71.66	170	225	272	224	72.43	181	237	285
	EET									
	Mean	SD	P25	P50	P75	Mean	SD	P25	P50	P75
0	235	67.35	194	246	296	254	64.24	218	277	308
1–2	220	72.85	175	229	281	235	73.35	192	252	302
3+	202	77.35	149	211	264	209	84.48	153	220	286
Total	229	70.29	185	239	290	245	70.32	203	266	306

Source: Authors calculations.



Given the highly skewed distribution in our outcome measures ([Supplementary Appendix Figure A2.1–A2.4](#)), we use quantile regression methods to compare differences in the number of months spent in paid employment and EET between ages 17 and 42 by conduct status across the distribution of employment outcomes thereby increasing the power to detect differences in the upper and lower tails. We compare differences both within and across the two cohorts at the 0.25, 0.50, and 0.75 centiles of the labour market participation distributions of men and women separately.

Our quantile regression model for the  $\tau$ th quantile takes the following form:

$$Q_{\tau}(Y_i) = \beta_0(\tau) + \beta_1(\tau)x_{i1} + \dots + \beta_p(\tau)x_{ip},$$

where  $Y$  is the dependent variable—either months in employment or months in EET—for individual  $i$  and where  $p$  is the number of regressor variables and the  $\beta$  are coefficients to be estimated at each quantile. The  $\beta_0$  intercepts differ by quantile. We vary the conditioning variables in a stepwise fashion, beginning with the categorical conduct problems variable alone (Model 1), followed by models additively incorporating family characteristics (Model 2), individual characteristics (Model 3), and educational attainment at age 16 (Model 4). Details for these blocks of control variables are provided at the footnote to [Tables 5](#) and [6](#).

## 5. Results

### 5.1 Descriptives

Men and women with teenage conduct problems in both cohorts spent less time in paid employment or EET between ages 17 and 42 compared with their peers with no problems and the ‘gap’ was widest for those with severe problems and widest of all for women in BCS70 ([Table 4](#)). Among men the employment gap between those with no conduct problems and those with three or more problems was around 2 years (21 months NCDS; 26 months BCS70). This was similar for women in the 1958 cohort (24 months), but the gap was 3 years (35 months) for women in the 1970 cohort.

Turning to EET, the ‘gaps’ are larger. Among men, those with severe conduct problems had 30 fewer EET months than men with no conduct problems in NCDS, a gap that rose to 35 months in BCS70. Among women the gaps were 33 and 46 months, respectively. Again, the penalty is largest for women in the younger cohort.

Looking at the total number of months spent in employment or EET among men in the top quartile of the participation distribution in both cohorts (Columns 5 and 10 in [Table 4](#)) there is little variance in months spent in employment or EET by teenage conduct problem status. The situation is different among women: there is a clear downward gradient in employment and EET participation among women in both cohorts by teenage conduct problem status, even among those in the top quartile of the labour market attachment distribution.

[Supplementary Appendix Tables A3.1](#) (NCDS) and [A3.2](#) (BCS70) show the differences in individual and family characteristics according to whether cohort members had no conduct problems in adolescence, mild (1–2), or severe (3+), for men and women separately. For men and women in both cohorts, those with severe conduct problems were more likely to have been a low birthweight baby, to have lower scores on average in reading and maths tests in mid-childhood, and to have achieved fewer good grade exam passes at age 16. Fewer had a mother who had experienced extended education or had a parent who worked in a non-manual occupation, and more lived with a single parent in rented or crowded accommodation on a lower family income.

In [Supplementary Appendix Tables A4.1](#) (NCDS) and [A4.2](#) (BCS70), we see the mean number of months spent in paid employment and EET by each of the characteristics detailed

in [Supplementary Appendix Tables A3.1 and A3.2](#) by sex and cohort. Broadly speaking, disadvantaged characteristics are associated with less time in paid employment or EET, with associations usually being stronger with EET than paid employment. For example, less time in EET was associated with having a mother who had minimum education, a parent who worked in a manual occupation, being part of a single-parent household, living in rented or crowded accommodation, and a lower family income. For men in both cohorts, having English or Maths qualifications were associated with less time in paid employment, but more time in EET; for women, qualifications were associated with more time in paid employment and EET.

## 5.2 Regression results

We estimate a series of quantile regression models for months spent in (i) paid employment and (ii) EET and their association with teenage conduct problems. Our model 1 specification presents the raw correlation. Model 2 adjusts for family socioeconomic background. Model 3 incorporates teenagers' individual characteristics while model 4 also controls for public examination results at age 16. We compare differences both within and across the two cohorts at the 0.25, 0.50, and 0.75 centiles of the labour market participation distribution. Results for months spent in paid employment are shown in [Table 5](#) and for months spent in EET in [Table 6](#).

### 5.2.1 Paid employment

[Table 5](#) shows the independent association between conduct problems in adolescence and time spent in paid employment between ages 17 and 42 for men (top panel) and women (bottom panel) in both NCDS and BCS70. In this and subsequent tables, we present the four models described above and capture the effects of mild and severe conduct problems, relative to having no conduct problems in adolescence, at the quartiles of the paid employment months distribution.

Conduct problems in adolescence are associated with less time in paid employment in all models and in all cases, the effect rises with the severity of the conduct problems. Concentrating on BCS70 men and model 1 in [Table 5](#), we see that men with minor conduct problems at the bottom quartile of the paid employment distribution (P25) spent 9.8 fewer months in employment compared with those without conduct problems. The effect halves to 4 months for men in the middle of the employment distribution (P50) and falls further to a statistically non-significant half-a-month at the 75th percentile of the employment months distribution. In comparison, those who had suffered severe conduct problems in adolescence had 34.4, 20.9, and 5.9 fewer months in paid employment between ages 17 and 42, respectively, when compared with those with no conduct problems at the three points across the distribution. The negative association between conduct problems and months in employment is greatest (smallest) among those who have the poorest (best) employment records in adulthood. These effects are of a similar magnitude as we condition on more variables (moving from models 1–4). The wide range of family and individual characteristics including childhood cognition and examination results at age 16 had very little—if any—impact on the strong relationship between teenage conduct problems and the number of months men spend in paid employment over the 26 years between ages 17 and 42. This pattern holds across the employment distribution.

Results are similar among men in the older NCDS cohort although the effects of conduct problems on time in paid employment are very weak or non-existent in the upper quartile of the employment distribution reflecting the very limited variance in employment rates among those in the top quartile in the NCDS cohort (just 3 months, see [Table 4](#)). The magnitude of conduct problem effects is similar in the bottom half of the employment distribution to that observed for the BCS70 cohort, and results are similarly robust to the inclusion of additional controls.

**Table 5.** Months spent in employment between 17 and 42 by conduct score, cohort, and sex

<b>Men</b>					
<b>NCDS</b>	<b>Ref Cat: 0</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>
P25	1–2 score	–6.4 (2.75)	–7.8 (2.91)	–8.6 (3.00)	–9.2 (3.13)
	3+ score	–33.2 (5.87)	–35.1 (5.64)	–35.7 (5.88)	–36.0 (6.28)
P50	1–2 score	–2.5 (2.04)	–4.3 (1.95)	–5.0 (1.89)	–5.3 (1.82)
	3+ score	–14.0 (3.76)	–15.4 (3.68)	–17.1 (3.75)	–17.8 (3.60)
P75	1–2 score	No variability	No variability	No variability	No variability
	3+ score	–1.8 (1.24)	–1.4 (1.32)	–1.4 (1.32)	–1.4 (1.42)
N (100%)		8,315	8,315	8,315	8,315
<b>BCS70</b>					
<b>NCDS</b>	<b>Ref Cat: 0</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>
P25	1–2 score	–9.8 (3.40)	–9.8 (3.42)	–7.5 (2.99)	–9.3 (3.25)
	3+ score	–34.4 (6.75)	–31.7 (6.35)	–29.3 (5.81)	–31.4 (6.42)
P50	1–2 score	–4.0 (2.59)	–3.7 (2.27)	–3.5 (2.15)	–4.9 (2.07)
	3+ score	–20.9 (5.22)	–18.9 (5.01)	–18.6 (4.74)	–20.1 (4.83)
P75	1–2 score	–0.5 (0.77)	–0.8 (0.93)	–0.8 (0.90)	–0.8 (0.96)
	3+ score	–5.9 (2.84)	–5.6 (2.36)	–5.5 (2.29)	–5.4 (2.29)
N (100%)		7,923	7,923	7,923	7,923
<b>Women</b>					
<b>NCDS</b>	<b>Ref Cat: 0</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>
P25	1–2 score	–13.8 (3.49)	–13.2 (3.94)	–10.5 (3.97)	–10.1 (3.98)
	3+ score	–38.3 (7.11)	–37.4 (7.57)	–31.8 (7.53)	–30.5 (7.42)
P50	1–2 score	–10.7 (2.95)	–9.9 (3.02)	–7.9 (2.93)	–7.7 (2.88)
	3+ score	–28.1 (6.32)	–27.5 (6.40)	–24.3 (6.06)	–23.4 (5.81)
P75	1–2 score	–6.4 (2.95)	–6.3 (2.95)	–5.3 (3.09)	–5.5 (2.97)
	3+ score	–17.9 (6.15)	–19.1 (6.02)	–17.1 (5.92)	–17.3 (6.14)
		8,237	8,237	8,237	8,237
<b>BCS70</b>					
<b>NCDS</b>	<b>Ref Cat: 0</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>
P25	1–2 score	–18.8 (3.59)	–12.6 (3.86)	–10.7 (3.76)	–10.8 (3.77)
	3+ score	–54.5 (6.43)	–44.1 (6.44)	–38.3 (7.06)	–38.2 (7.43)
P50	1–2 score	–10.9 (3.16)	–9.1 (3.35)	–8.0 (3.16)	–8.3 (3.03)
	3+ score	–35.5 (6.04)	–30.7 (6.57)	–27.4 (6.23)	–28.7 (6.38)
P75	1–2 score	–5.9 (3.12)	–5.3 (2.84)	–4.6 (2.72)	–5.2 (2.73)
	3+ score	–19.2 (5.08)	–18.3 (5.37)	–17.2 (5.82)	–17.6 (5.70)
N (100%)=		7,891	7,891	7,891	7,891

Notes: P25, P50, and P75 = percentile distribution. Ref Cat = 0 conduct problems. Standard error in parentheses. No variability: coefficient does not vary from reference category. Model 1: Conduct problems 16; Model 2: Model 1 + Family characteristics (parental occupation class age 0; family income age 10/16 [BCS70/NCDS]; mothers education level age 0; single parent age 0; housing tenure age 5/7; overcrowded home age 5/7); Model 3: Model 2 + Individual characteristics (first born child age 0; low birthweight age 0; time breastfed age 5/7; cognition age 10/11); Model 4: Model 3 + exam results (number of 'good grade' exam passes; English language exam pass; maths exam pass, age 16).

Source: Authors calculations.

In terms of differences between mild (1–2) and severe (3+) problems, we found these to be statistically significantly different from one another among those at the bottom quartile of time spent in employment, and among those at the median point of the employment experience distribution, but not at the 75th percentile of time spent in employment distribution.

The broad pattern of results is similar for women: the effects of conduct problems rise with their severity; they are larger in the lower part of the paid employment distribution

and are robust to the addition of controls. Results are similar for women across both birth cohorts, though the effects of severe conduct problems in the bottom quartile of the paid employment distribution seem to have increased in size between the NCDS and BCS70 cohorts. There were also no differences in time spent in employment between minor and severe conduct problems across the distribution for women in the older NCDS cohort, but significant differences between mild and severe problems were noted at the bottom quartile and median point of the employment experience distribution for BCS70 women, but as found for men, not at the 75th percentile of time spent in employment distribution.

### 5.2.2 EET

The relationship between conduct problems and months spent in EET across the distribution for men is depicted in [Table 6](#). The association between conduct problems in adolescence and lost months in EET follows similar patterns to that for months in paid employment, but the effects tend to be larger. For instance, among the NCDS birth cohort, men at the bottom quartile of the EET distribution who had severe conduct problems in adolescence spend 56 months less time in EET than those who had no conduct problems (compared with a 33-month differential in employment months). Even when one condition on a wide range of individual and background family variables the differential remains 38 months, and it remains 38 months even when conditioning on educational attainment by age 16. The differential is roughly half the size for those men in NCDS at the median point in the EET distribution, but the effects remain large. Results are similar in the BCS70 cohort. At the higher end of the distribution, there is no variability in time spent in employment by level of conduct problems for men in the older NCDS cohort, with the difference being less than 3 months for those with severe problems in the 1970 cohort. As found for paid employment, differences between mild (1–2) and severe (3+) problems are statistically significantly different from one another among men in both cohorts at the bottom quartile of time spent in EET, and among those at the median point of the EET experience distribution, but not at the 75th percentile of the distribution.

Turning to women, a more complex relationship emerges across cohorts. As [Table 6](#) shows, compared with women in the 1958 cohort, conduct problems had more impact on time spent in EET for women in the 1970 cohort at the lower (P25) and middle (P50) of the distribution, and less impact for those at the upper end. Concentrating on model 1, the bottom panel of [Table 6](#) shows that women in the 1958 cohort at the lower end of the distribution (P25) with mild or severe conduct problems spent 20.3 and 46.7 fewer months in EET, respectively, relative to those with no conduct problems, while those in the middle (P50) spent 18.1 and 37.2 fewer months in EET, and those at the upper end (P75) 16.5 and 34.8 fewer months. For women in the 1970 cohort, we see that the relationship was similar for those with mild or severe conduct problems at the lower (26.4 and 65.5 fewer months in EET) and the middle (24.5 and 56.2 fewer months) parts of the EET distribution. But mild and severe conduct problems had far less impact on time in EET for those at the upper end of the EET distribution (reducing EET by 5.7 and 20.3 months, respectively). These cohort differences at the upper end of the distribution could reflect the longer time spent in education or training by women in the 1970 cohort (see [Supplementary Appendix A4](#)). Once again, there was no difference in time spent in EET between mild and severe conduct problem groups across the distribution for women in the 1958 cohort, but differences between mild and severe problems in the 1970 cohort were significantly different from one another among those at the bottom quartile and among those at the median point of the EET experience distribution, but not at the 75th percentile of time spent in EET distribution.

Unlike for months spent in employment, family background and individual characteristics did more to attenuate the relationship between conduct problems and months spent in EET for men and women with minor and severe conduct problems across the distribution in both cohorts. However, where there were gaps, they remained sizable. Given the wide

**Table 6.** Months spent in EET between 17 and 42 by conduct score, cohort, and sex

Men					
NCDS	Ref Cat: 0	Model 1	Model 2	Model 3	Model 4
P25	1–2 score	–21.1 (3.34)	–17.2 (2.97)	–12.1 (2.97)	–11.8 (2.83)
	3+ score	–55.9 (6.68)	–47.6 (5.68)	–38.4 (6.28)	–37.9 (6.63)
P50	1–2 score	–7.2 (1.35)	–4.9 (1.45)	–3.0 (1.36)	–2.6 (1.33)
	3+ score	–26.2 (2.52)	–22.6 (2.96)	–19.4 (3.19)	–18.9 (2.88)
P75	1–2 score	No variability	No variability	No variability	No variability
	3+ score	No variability	No variability	No variability	No variability
N (100%)		8,315	8,315	8,315	8,315
BCS70					
NCDS	Ref Cat: 0	Model 1	Model 2	Model 3	Model 4
P25	1–2 score	–24.9 (3.60)	–17.0 (3.24)	–12.3 (2.85)	–12.4 (2.90)
	3+ score	–59.2 (7.22)	–45.5 (6.36)	–36.3 (6.13)	–36.2 (6.11)
P50	1–2 score	–6.8 (2.11)	–4.0 (1.34)	–3.3 (1.33)	–3.4 (1.32)
	3+ score	–28.3 (5.18)	–23.2 (4.39)	–20.5 (4.41)	–20.6 (4.54)
P75	1–2 score	–0.6 (0.55)	–0.6 (0.37)	–0.4 (0.28)	–0.4 (0.29)
	3+ score	–2.9 (0.65)	–2.7 (0.69)	–2.4 (0.73)	–2.4 (0.71)
N (100%)		7,923	7,923	7,923	7,923
Women					
NCDS	Ref Cat: 0	Model 1	Model 2	Model 3	Model 4
P25	1–2 score	–20.3 (3.31)	–16.3 (3.54)	–11.9 (3.67)	–10.4 (3.74)
	3+ score	–46.7 (7.46)	–37.8 (8.21)	–31.0 (7.24)	–29.4 (7.09)
P50	1–2 score	–18.1 (2.95)	–14.6 (2.77)	–11.3 (2.97)	–10.1 (2.88)
	3+ score	–37.2 (6.45)	–31.2 (5.80)	–24.7 (5.86)	–22.4 (5.64)
P75	1–2 score	–16.5 (3.25)	–13.0 (3.20)	–6.5 (2.70)	–6.2 (2.81)
	3+ score	–34.8 (6.02)	–29.1 (5.90)	–21.3 (5.95)	–19.3 (6.29)
N (100%)=		8,237	8,237	8,237	8,237
BCS70					
NCDS	Ref Cat: 0	Model 1	Model 2	Model 3	Model 4
P25	1–2 score	–26.4 (4.01)	–18.7 (3.98)	–15.3 (4.11)	–14.6 (4.01)
	3+ score	–65.5 (7.29)	–50.5 (7.01)	–42.9 (6.97)	–41.3 (6.93)
P50	1–2 score	–24.5 (4.55)	–15.5 (3.87)	–11.1 (3.12)	–10.3 (3.32)
	3+ score	–56.2 (6.51)	–41.1 (6.76)	–33.2 (6.09)	–32.6 (6.24)
P75	1–2 score	–5.7 (1.99)	–3.5 (1.31)	–2.9 (1.70)	–3.0 (1.68)
	3+ score	–20.3 (5.38)	–16.1 (4.38)	–14.1 (4.41)	–13.9 (4.41)
N (100%)=		7,891	7,891	7,891	7,891

Notes: P25, P50, and P75 = percentile distribution. Ref Cat = 0 conduct problems. Standard error in parentheses. No variability: coefficient does not vary from reference category. Model 1: Conduct problems 16; Model 2: Model 1 + Family characteristics (parental occupation class age 0; family income age 10/16 [BCS70/NCDS]; mothers education level age 0; single parent age 0; housing tenure age 5/7; overcrowded home age 5/7); Model 3: Model 2 + Individual characteristics (first born child age 0; low birthweight age 0; time breastfed age 5/7; cognition age 10/11); Model 4: Model 3 + exam results (number of 'good grade' exam passes; English language exam pass; maths exam pass, age 16).

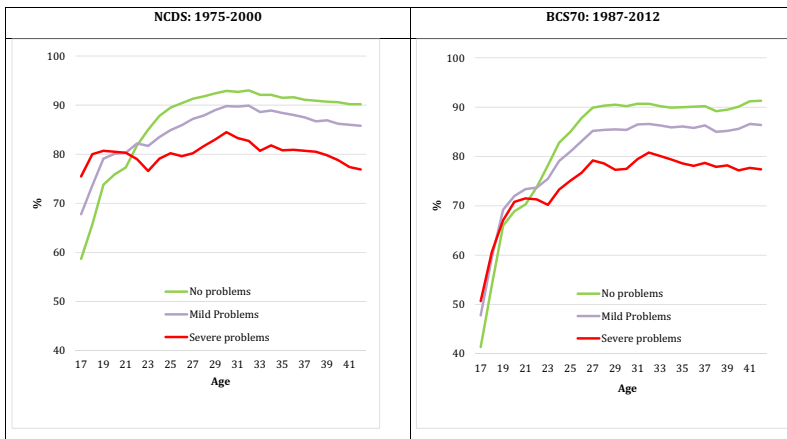
Source: Authors calculations.

array of conditioning variables included in the full model—most notably family background including parental occupation and education experience, individual cognition, and examination results at age 16—it is very unlikely that the inclusion of additional variables would remove the gaps and attribute the entire estimated effect of conduct problems on time spent in employment or EET to selection bias. Unfortunately, we could not formally assess this using the procedures first advanced by [Altonji et al. \(2005\)](#) and developed by [Oster \(2019\)](#) as this is only applicable for OLS regressions on non-imputed data.

A key finding from these analyses is that for men who get a footing in the labour market at an early stage of their career, minimal—if any—disadvantage is observed in the time spent in paid employment or EET over 26 years for those with minor or severe conduct problems. Although the evidence is stronger for the older 1958 cohort, perhaps reflecting increased access to lower-skilled jobs on school leaving in the mid-1970s, the pattern is observed in both cohorts. However, this is not so for women. Women with conduct problems at the upper end of labour market involvement continue to experience disadvantage in both cohorts, and women in the younger 1970 cohort at the lower or middle of the labour market distribution face more disadvantage than women in the earlier cohort. With the increased importance of ‘soft’ skills for labour market success and lower-skilled jobs for women being more public-facing than those of men (e.g., retail positions compared with labourers), the results suggest women with teenage conduct problems become increasingly disadvantaged in the labour market and also that they may also be opting for the other economic activity option—namely full-time homecare responsibilities—that is available to women and not so readily for men, particularly for men in these two cohorts.

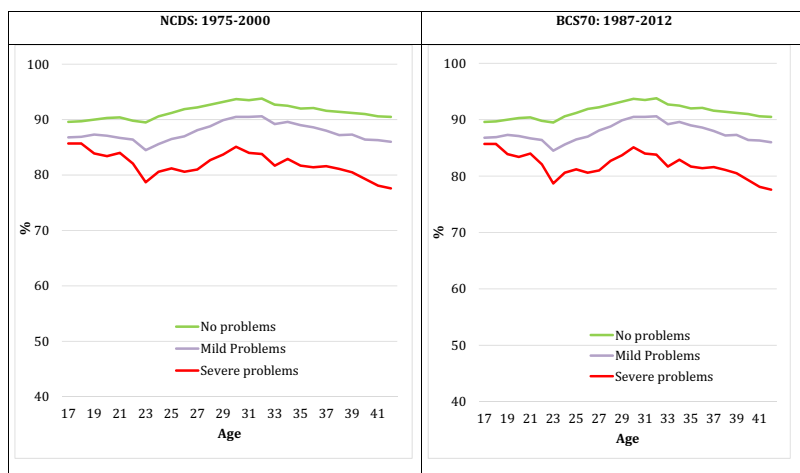
### 5.2.3 When do gaps start to appear?

To see when the gaps started to appear, we used the life history data to generate an economic activity status for each of the 26 individual years between ages 17 and 42. These identified whether cohort members had spent the majority of each 12-month period in paid employment or EET. In the case that an equal number of months were spent in and out of paid employment or EET, an employed or EET status was awarded. Figures 1–4 reveal a remarkably stable picture for both men and women in both cohorts. The gaps emerge early and persist over the years. For instance, Figure 1 shows the percentage of men in paid employment in each year between ages 17 and 42 by cohort and teenage conduct status. Among those with no conduct problems in adolescence in NCDS, employment rates rise by one-third to over 90% once they reach their mid-20s, and then plateau. Those with mild problems in adolescence (one or two behavioural problems) see a shallower rise in their employment rates that peak at around 90% when age 30. But among those who suffered severe behavioural problems employment rates tend to flat-line throughout, varying between about 75% and 85%: they see none of the improvement in paid employment rates seen by the other two groups in their late-teens and twenties.



**Figure 1.** Percentage of men employed in each year between ages 17 and 42 by cohort and teenage conduct problems.

Source: Authors calculations.



**Figure 2.** Percentage of men in EET in each year between ages 17 and 42 by cohort and teenage conduct problems.

Source: Authors calculations.

If we turn to paid employment rates among men in BCS70, all three groups experience a rapid growth in employment rates in their late teens, after which point employment rates fan out. Those with no conduct problems in adolescence experience continued growth in employment rates until their late 20s, while those with mild problems in adolescence follow a similar, shallower trajectory. Those with severe problems experience some improvement but the 10-percentage point gap in employment by age 27 between those with severe and those with no problems persists after that point all the way through to age 42.

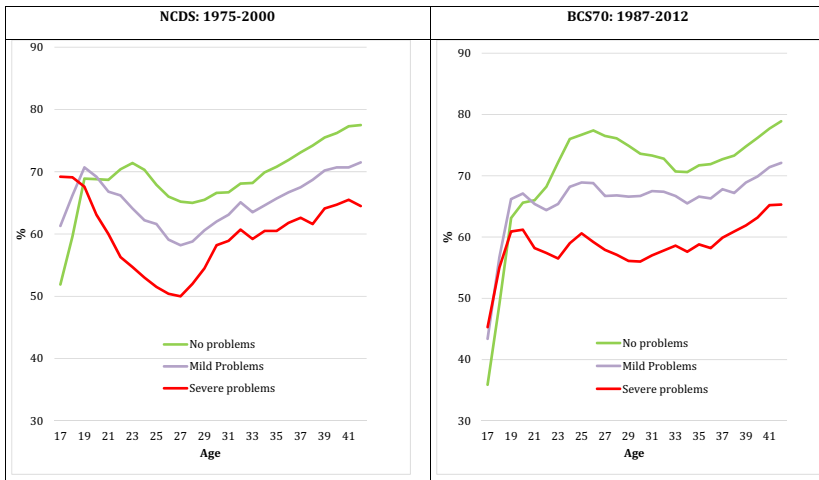
Figure 2 presents similar graphs for NCDS and BCS70 men, but this time for EET rates. In NCDS, whereas EET rates flat-line among those with no and mild problems, the small gap at the outset compared with those with severe problems opens up quickly as EET rates fall for this group in their early 20s. Despite some recovery in their mid- to late-20s, there is further deterioration thereafter such that EET rates among those men with severe conduct problems in adolescence fall almost 10-percentage points between ages 17 and 42. The picture looks a little different in BCS70 with those with no problems and those with mild problems seeing gradual growth in their EET rates over their life course, compared with them flat-lining among those with severe problems. This results in a 5-percentage point gap in EET rates at age 17 widening to 12% points by age 42.

Turning to women, Figure 3 presents paid employment rates for women by cohort and teenage conduct status. In NCDS, employment rates are initially a little higher among those with severe conduct problems when compared with those with mild or no problems, but the situation is very quickly reversed once women entered their 20s. Employment rates plummeted to 50% by age 27 among those women with severe conduct problems in adolescence—15% points below those who had no problems in adolescence. They recovered somewhat subsequently but there was still a 10-percentage point gap by age 42.

In BCS70, what was only a small employment gap at age 20 between those with no conduct and those with severe conduct problems had opened up to a 20-percentage point paid employment gap by age 23. The gap closed somewhat during their 30s but remained at 13% points by age 42.

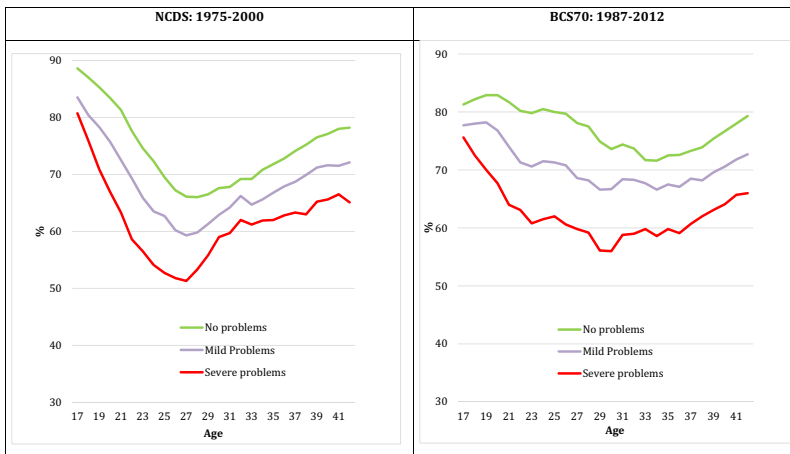
Finally, turning to EET rates among women, we see a u-shaped pattern in the NCDS cohort between ages 17 and 42, but it is much shallower for those with no conduct problems





**Figure 3.** Percentage of women employed in each year between ages 17 and 42 by cohort and teenage conduct problems.

Source: Authors calculations.



**Figure 4.** Percentage of women in EET in each year between ages 17 and 42 by cohort and teenage conduct problems.

Source: Authors calculations.

in adolescence (Figure 4). The gap in EET rates is greatest in their mid-20s but persists throughout. The u-shape is also apparent in EET rates among women in BCS70 who had experienced severe behavioural problems in adolescence, but it is less apparent in other women. Again, the gap that opens up rapidly from late-teenhood and never closes, although rates do converge a little once women enter their 30s.

The increased gap observed for women in both cohorts by their conduct problems reflects the earlier and increased exit from the labour market for women with severe conduct problems, following (for the majority) earlier entrance to childbirth and pre-school childcare responsibilities. However, it is important to reflect that the gap persists when women start to return to the labour market from the mid-late-20s (1958 cohort) and early-mid-30s (1970 cohort), as indicated by the upward curve in the participation lines.

## 6. Discussion and conclusion

In this article, we explore the extent to which those with conduct problems prior to entering the labour market face cumulative disadvantage over 26 years from ages 17 to 42.

Using comparable data across two birth cohorts born 12 years apart, we have shown that those with conduct problems spend considerably less time in paid employment and in EET than their counterparts without conduct problems. The gaps remain sizeable controlling for family background and individual characteristics: indeed, in many cases, the introduction of these controls does little to diminish the size of the gaps. Furthermore, and in line with earlier research (e.g., [Fergusson and Horwood, 1998](#); [Colman \*et al.\*, 2009](#); [Richards \*et al.\*, 2009](#)), the inclusion of educational attainment at age 16 plays little role, suggesting that the effects of conduct problems in adolescence do not operate through any adverse impact they may have in obtaining school qualifications.

Those with more severe conduct problems in adolescence face the biggest labour market penalties in adulthood. These tend to emerge early in the life course and persist through to age 42, although there are some differences in the changing size of the penalties across sex, cohort, and whether we are measuring paid employment or EET rates. There is no evidence that those with the most severe adolescent conduct problems are catching up in labour market terms when they reach age 42.

Quantile regressions reveal that those with the poorest labour market participation suffer most from their adolescent conduct problems, and those with the strongest employment records suffer least. Indeed, an important finding is that for those with early and consistent attachment to the labour market (p75), there is no (or minimal) disadvantage observed for men regardless of severity of conduct problems.

The previous literature points to potentially important sex differences in the relationship between conduct problems in adolescence and subsequent labour market experiences. We have shown that impacts on participation appear to be larger for women with conduct problems than for men, particularly for the younger cohort of women, even if women make up a smaller proportion of those who are identified with teenage conduct problems. It is important to note here that previous research using birth cohort and other data sources have largely focused on the experience of unemployment or a period of chronic economic activity, whereas this article has looked at time in paid employment or EET over 26 years, which may account for some of the differences in findings, particularly for women. The findings may also indicate that the challenges faced by women are more severe, or it may reflect on the ways in which the intersection of sex and behaviour is particularly penalized. As observed, the increasing importance of 'soft' skills for labour market success ([Deming, 2017](#)) and that lower-skilled jobs for women are more public-facing than those of men may work to disadvantage women with conduct behaviour traits in ways that they do not for men, in turn making the option of a full-time homecare role more of an appealing alternative.

Given youth mental health difficulties, increased anxiety and behaviour problems (tics) have increased substantially for current generations of youth, and may have been exacerbated by the COVID-19 pandemic (e.g., [Banks and Xu, 2020](#); [WHO, 2022](#)), our findings suggest that the long-term employment implications should be a matter of concern and research interest.

## 7. Limitations

A great strength of this research lies in the fact that we were able to employ identical measures of conduct problems assessed at the same age in two generations of British children born 12 years apart and achieved measurement invariance which allowed for cross cohort comparison.

However, a limitation is that our findings can only be generalized to those born in Britain in 1958 or 1970 or close to these years and the different labour market conditions

experienced by men and women at different ages in the two cohorts must be acknowledged. It also needs to be acknowledged that given our data are derived from an observational longitudinal study, bias due to unmeasured confounding cannot be ruled out. As in any longitudinal survey, missing data due to attrition are unavoidable. We employed multiple imputation, augmenting our models with auxiliary variables in the imputation phase to maximize the plausibility of the MAR assumption and restore sample representativeness, but bias due to a non-ignorable missing data generating mechanism cannot be ruled out. Notwithstanding these limitations, the article provides evidence that teenage conduct problems are associated with subsequent labour market disadvantage for men and women in both generations that persist over the lifecourse.

## Supplementary material

Supplementary material is available on the OEP website. This includes the [Online Appendix](#), the Stata code to replicate the descriptive and quantile regression analyses, and a dataset that includes all imputed variables used in the analyses. The data that are used in this article are available to download from the UK data service. The links to all datasets used in the analyses are included in the references, under ‘University of London’.

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