

# The long-term consequences of early school absences for educational attainment and labour market outcomes

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## Abstract

School absences can negatively impact a child's schooling, including the loss of teacher-led lessons, peer interactions, and, ultimately, academic achievement. However, little is known about the long-term consequences of school absences for overall educational attainment and labour market outcomes. In this paper, we used data from the 1970 British Cohort Study to examine long-term associations between school absences in late childhood and individuals' educational attainment, social class, unemployment and earnings at age 42 while adjusting for a comprehensive set of confounders. Our findings show that school absences are associated with lower educational attainment but are not associated with social class destination except for increasing the likelihood of being out of the labour force after adjusting for confounders. Individuals who missed five days of school at age 10 were 5.2% more likely to have obtained no qualifications and 4.1% more likely to be out of the labour force. However, we did not find a significant association between school absences and individuals' earnings or duration of unemployment. Our findings suggest that the detrimental consequences of school absences persist beyond schooling into adulthood. Overall, this study highlights the importance of addressing school absenteeism to promote educational and labour market participation over the life course.

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**KEYWORDS**

educational attainment, labour market, life course, school absences

**Keys insights****What is the main issue that the paper addresses?**

This study examines long-term associations between school absences in late childhood and individuals' educational attainment, social class, unemployment and earnings in adulthood using the 1970 British Cohort Study.

**What are the main insights that the paper provides?**

School absences are associated with lower educational attainment but not with social class destination except for increasing the likelihood of being out of the labour force after adjusting for confounders. There is no statistically significant effect on earnings and time in unemployment.

**INTRODUCTION**

School absenteeism is a pervasive problem and has detrimental consequences for children's school achievement (e.g. Department for Education, 2016; Klein et al., 2022). This is because children miss out on teacher-led lessons, peer interactions and the development of positive psychosocial (e.g. prosocial behaviour) or aspirational dispositions (e.g. educational aspirations and motivation) that may stimulate their learning and development (Kirksey, 2019; Morrissey et al., 2014). In the UK, students in state-funded primary, secondary, and special schools missed between 5 and 7% of school days on average in 2018–19 (Department for Education, 2020; Scottish Government, 2019; Welsh Government, 2022).

The Covid-19 pandemic has further exacerbated the issue of school absenteeism. Evidence from different educational contexts indicates that school attendance rates fell compared with before the Covid-19-related school closures when children returned to class (Fortin, 2022; Sibieta, 2020; Sosu & Klein, 2021). This is probably the result of the struggles that young people encountered during the period of home learning and, for some, extended disengagement from school during the school closures (Julius & Sims, 2020). As a result, children's learning loss and lower achievement during the Covid-19 pandemic may not only be caused by school closures (Engzell et al., 2021; Maldonado & De Witte, 2022), but continue to be driven by lower attendance rates after schools reopened.

Not only are school attendance rates declining, but they are also socially stratified. Children from disadvantaged socioeconomic backgrounds are more likely to miss school than those from affluent backgrounds (Attwood & Croll, 2006; Klein et al., 2020). After the Covid-19-related school closures, this socioeconomic disparity in school attendance further widened (Sibieta & Robinson, 2020; Sosu & Klein, 2021). Because school absences are stratified by socioeconomic status, they contribute to socioeconomic achievement gaps (Gershenson et al., 2017; Morrissey et al., 2014) and probably other life course outcomes.

Since school absenteeism is growing and socially stratified, it is crucial to determine whether and to what extent children's long-term educational and labour market outcomes suffer when they miss school. While we know much about the short-term impact of absences on educational outcomes such as achievement (e.g. Aucejo & Romano, 2016; Gottfried, 2010, 2011) or school dropout (e.g. Rumberger, 1995; Smerillo et al., 2018), only a limited number of studies have investigated whether these effects persist or accumulate beyond schooling. Most studies have tended to focus on more immediate post-school outcomes such as the likelihood of enrolling in college in the US (Liu et al., 2021), the number of years spent in postsecondary education in the US (Ansari et al., 2020) or occupational and employment outcomes up to age 23 in a UK context (Attwood & Croll, 2006, 2015; Department for Education, 2018; Hibbett et al., 1990). Only Cattan et al. (2022) evaluated the longer-term effects of primary school absences on final educational attainment, employment and labour income up to age 40 using Swedish register and school administrative data for a cohort born between 1930 and 1935. We advance this literature by considering a more recent cohort born in 1970.

Using data from the British Cohort Study 1970 (BCS70), our study addresses this research gap by examining the consequences of absenteeism in childhood on educational attainment, social class destination, unemployment and earnings in mid-adulthood.

## CONSEQUENCES OF SCHOOL ABSENTEEISM

There are several plausible pathways by which school absences in childhood may affect educational and labour market attainment. According to the faucet theory, for instance, students develop their skills through regular exposure to education, and once that exposure is stopped, they stop advancing their skills (Entwisle et al., 2001). As a result, students who attend school less frequently are disadvantaged academically and may not progress as quickly as children who attend more frequently. In other words, school absences can directly impact educational achievement owing to learning loss. In addition, students who are frequently absent from school may feel less connected to their classmates and struggle to participate in classroom activities and interactions with teachers and peers, indirectly influencing their academic development (Korpershoek et al., 2020).

There is compelling evidence from the US that school absences are detrimental to students' academic achievement (e.g. Aucejo & Romano, 2016; Gottfried, 2010, 2011; Gottfried & Kirksey, 2017; Kirksey, 2019; Morrissey et al., 2014). Children with more frequent absences in early kindergarten, for example, have lower working memory and cognitive flexibility scores in early childhood (Ansari & Gottfried, 2021; Gottfried & Ansari, 2021), as well as lower literacy and grade point average scores at age 15 (Ansari & Gottfried, 2021; Ansari & Pianta, 2019; Gottfried & Ansari, 2021). Furthermore, school absenteeism has been linked to lower high school academic achievement and completion (Smerillo et al., 2018). For England, an increase in overall absence levels decreased achievement at the end of primary and compulsory secondary education (Department for Education, 2016). A recent Scottish study reported that school absences in secondary harm adolescents' achievement in high-stakes national exams at the end of compulsory and post-compulsory schooling (Klein et al., 2022).

The initial learning loss from school absences may persist and negatively affect longer-term educational attainment and labour market returns. According to developmental and economic theories, a person's long-term capabilities and outcomes are contingent on the skills and dispositions he or she possesses from a younger age (Heckman, 2006; Shonkoff & Phillips, 2000). Absences from school can impede learning and the accumulation of the human capital necessary for success in postsecondary education and the labour market

(Heckman et al., 2006). Absences can result in small immediate learning losses that accumulate to larger human capital losses and lower labour market returns. Specifically, they may affect individuals' life courses through their impact on lowering school qualifications, which decreases the likelihood of achieving favourable outcomes in higher education and the labour market in the short and long run (Bynner & Parsons, 2002; Caspi et al., 1998; French et al., 2015; Hodge et al., 2021; Iannelli et al., 2016; Iannelli & Duta, 2018; Papay et al., 2022; Rose & Betts, 2004).

Moreover, school absences exacerbate children's problem behaviours (Ansari & Pianta, 2019; Hallfors et al., 2002; Rocque et al., 2017), which, in turn, has detrimental consequences for life course outcomes (Baert & Verhofstadt, 2015; Healey et al., 2004; Le et al., 2005; MacDonald & Pudney, 2001; Parsons et al., 2022; Tanner et al., 1999; Terza, 2002). They further reduce children's social-behavioural skills (Gottfried, 2014; Santibañez & Guarino, 2021), dispositions that probably contribute to positive long-term educational and labour market outcomes (Daly et al., 2015; Deming, 2017; Heckman et al., 2006; Lleras, 2008). For instance, even after controlling for cognitive ability and academic achievement, Lleras (2008) found that students judged by their teachers to be more motivated and to get along well with other high school students completed more education and had higher earnings.

Most research examining the longer-term effects of school absences focuses on outcomes immediately following secondary school. Regarding educational attainment, Liu et al. (2021) found that students in a large California school district were 2% less likely to attend college if they missed 10 classes in ninth grade. Ansari et al. (2020) looked at a group of students from 10 different US locations and found that students who missed more school between kindergarten and eighth grade were less likely to go to college. For England, Attwood and Croll (2006, 2015) found that being absent from lower secondary school was linked to dropping out at age 16 and having a higher risk of unemployment. According to a report by the Department of Education (2018) for England, more than 10% of absences in lower secondary school greatly increased the long-term risk of not being in education, employment or training three years after finishing compulsory schooling. For Scotland, Furlong (2006) found that students with truancy-related absences were more likely to not be in school, work or training three years after graduation. Hibbett et al. (1990) looked at Great Britain and found that skipping school at age 16 was linked to lower-paying jobs, less stable career paths and more unemployment at age 23. Only Cattani et al. (2022) used Swedish register and school administrative data to look at the long-term effects of primary school absences on employment and earnings up to the age of 40. They found that absences in early childhood reduced cohort members' final educational attainment and labour income but were not significantly related to employment.

## THE PRESENT STUDY

This study aims to advance our understanding of school absenteeism and life course outcomes by examining the relationship between absences and long-term educational and labour market outcomes. It uses a unique longitudinal dataset, the British Cohort Study 1970 (BCS70), which followed a cohort of children born in Britain during a single week in 1970 into their 40s. Owing to a lack of data linking children's school absences to their later life course trajectories, the literature on school absences and educational and labour market outcomes is scant. The BCS70 is ideally suited to examine this relationship, as it measures school absences at age 10 and provides detailed information on educational attainment and labour market returns (social class, earnings, unemployment risk) at various life course stages.

The study contributes to the literature in numerous ways. First, our study investigates the relationship between school absences and longer-term educational and labour market outcomes in mid-adulthood. Very few studies have considered outcomes beyond secondary schooling, and those that did tend to focus on more immediate post-school outcomes, such as the likelihood of enrolling in college (Liu et al., 2021) or the number of years spent in post-secondary education (Ansari et al., 2020).

Second, we examine a comprehensive set of labour market outcomes, including class destination, earnings and the risk of unemployment at age 42, a stage of peak earnings and at which occupational careers have stabilised (Bukodi et al., 2016; Bukodi & Goldthorpe, 2011; Office for National Statistics, 2022). Prior research has been limited to occupational and employment outcomes up to age 23 and has focused primarily on truancy as a measure of absenteeism (Attwood & Croll, 2006, 2015; Hibbett et al., 1990). Cattan et al. (2022) examined the influence of early school absences on labour market outcomes up to age 40 in Sweden but for a much older birth cohort (1930–1935).

Third, analysing the long-term effect of school absence on educational and labour market outcomes necessitates a robust strategy for isolating its causal effect from unobserved confounding. Students who miss school may come from lower socioeconomic backgrounds, have less cognitive ability, exhibit more problem behaviour or have poorer health, which, if not addressed, could lead to biased estimates between absences and outcomes. Most existing studies on the association between school absences and post-school outcomes did not sufficiently account for confounding risk antecedents (e.g. Attwood & Croll, 2006, 2015; Department for Education, 2018). Cattan et al. (2022) employed a sibling fixed effects design to exploit within-family variation in absences and account for all time-invariant family-level factors. Nonetheless, time-varying (family) characteristics may affect siblings differently, making associations between absences and outcomes potentially spurious. In addition, sibling fixed effects estimates cannot be generalised beyond siblings and may underestimate average treatment effects in the full population (Björklund & Jäntti, 2012). To account for the endogeneity of school absences, the BCS70 permits us to adjust for important risk factors of absences (Gubbels et al., 2019) that may also influence individuals' educational attainment and labour market outcomes, such as sociodemographic characteristics, child cognitive ability, behaviour and health.

## DATA AND METHODS

### Data

The target population of the BCS70 were all children born in England, Scotland or Wales in the week from 5 to 11 April 1970 (Elliott & Shepherd, 2006). Data were collected at birth and at age 5, 10 and 16, and in 4 year intervals from 26 onwards. In the first sweep, the parents of 17,196 newborns participated. Our analytical sample consists of all households who participated in the first (birth) and third sweep (age 10, when school absences have been measured), which leaves us with 13,776 cases. Cohort members' school absences and confounders in the BCS70 data are observed between birth and age 10 (sweeps 1–3; Butler et al., 2016; Butler & Bynner, 2016; Chamberlain & Chamberlain, 2013). To deal with item non-response on all these variables, we used multiple imputation (for more information, see Section 4.3). Cohort members' educational attainment and labour market outcomes are measured with survey information from age 30 to 42 (sweeps 6–9; University of London, 2016, 2019, 2020, 2022b) and the Activity Histories dataset (University of London, 2022a). Panel attrition until age 42 was addressed with inverse probability of attrition weighting (see Section 4.3).

## Variables

### School absences

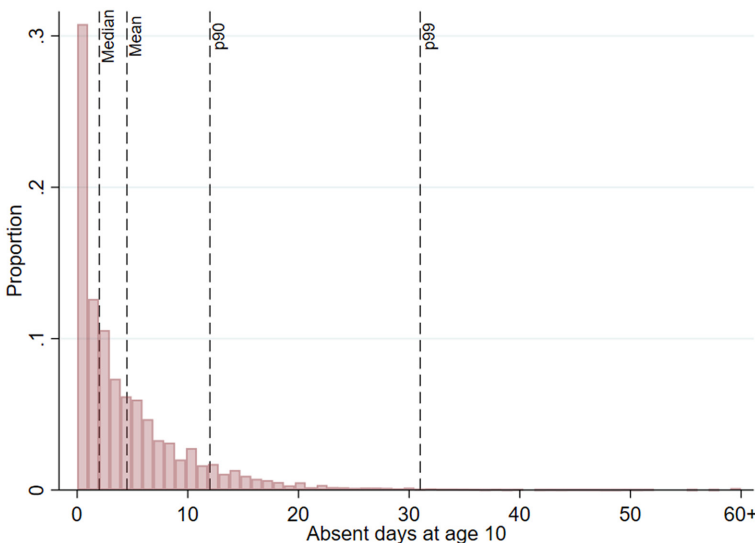
School absences were measured in sweep 3 when children were 10 years old.<sup>1</sup> Teachers were asked the following question: ‘We would be glad if you would add up the total number of days schooling missed by the child last term, for whatever reason (add half days as well)’. Since teachers were mostly surveyed between March and July, absences mainly refer to the spring term. Reported absences are strongly skewed, with a mean of 4.5 days (SD = 6.9) and a median of 2 days.<sup>2</sup> One per cent of the students missed 31 days or more (see Figure 1). About 83% of school absences are due to illness (see Online Appendix Table A1).

### Outcomes

We considered four outcomes: educational attainment, social class, unemployment and earnings, all measured between ages 32 and 42. Table 1 shows the distribution of these variables.

We measured *educational attainment* as the highest academic or vocational qualification individuals obtained at age 42 (Dodgeon & Parsons, 2011). We distinguish between:

1. *no qualification* (12.1% in the weighted sample);
2. *lower-level school qualification*<sup>3</sup> or vocational equivalent (bad O-levels, CSE grades 2–5, National Vocational Qualification (NVQ) level 1, 8.2%);
3. *middle-level school qualification* or vocational equivalent (good O-levels, 2+ AS levels or 1 A level, NVQ level 2, 25.4%);
4. *higher level school qualification* or vocational equivalent (more than one A level, NVQ level 3, 15.0%);



**FIGURE 1** Distribution of school absences in the last term when surveyed at age 10, unweighted. Source: 1970 British Cohort Study (BCS70). Note:  $N = 13,776$ , multiple imputed. This statistic includes observations who left BCS70 before age 42. See Section “Missing data”.

5. *first degree* or vocational equivalent (diploma, degree or PCGE, NVQ level 4, 31.9%); and
6. *higher degree* or vocational equivalent (higher degree or NVQ level 5, 7.0%).

We measured cohort members' *social class destination* using the National Statistics Socioeconomic Classification (NS-SEC). The NS-SEC captures differences in employment relations associated with advantages and disadvantages in income security, short-term income stability and longer-time income prospects (Goldthorpe & McKnight, 2006). We used the class in which individuals spent the most time in the decade preceding their 42nd birthday to enable a comprehensive identification of their dominant occupation using economic history data (Bukodi et al., 2016). We distinguished between:

1. *salariat class*—higher and lower managerial, administrative and professional occupations (NS-SEC 1–2, 36.8%);
2. *intermediate class*—intermediate occupations, small employers and own account workers (NS-SEC 3–4, 20.9%);
3. *working class*—lower supervisory and technical, semi-routine or routine occupations (NS-SEC 5–7, 27.7%);
4. *non-employed*—inactive, unemployed, in education, or looking after home (14.6%).<sup>4</sup>

Using the economic history data, we measured the *number of months in unemployment* over the last 10 years (age 32–42). Months in unemployment are strongly skewed. Some 89% of individuals did not have any unemployment spells, and the average time that individuals spent in unemployment was 2.4 months. Some 4% had been unemployed for at least 1 year, and 1% for more than 5 years.

We measured *earnings* as the gross weekly earnings reported at age 42. Earnings at age 42 are only observed for employed individuals (71% in our sample), excluding cohort members who are unemployed, inactive or self-employed from the analysis. We bottom- and top-coded earnings at the first (£34.52) and 99th percentile (£3356.16) to deal with implausible values and outliers. In the analysis, we take the natural logarithm of earnings to deal with their skewed distribution.

## Covariates

Drawing on existing literature (e.g. Gubbels et al., 2019), we controlled for many significant risk factors of school absences that may also affect educational attainment and labour market outcomes and would, therefore confound, their association. This includes household sociodemographic, child, parent and school characteristics. We measured confounders at the same time as school absences (sweep 3—age 10) and used covariates at age 5 for measures where reverse causality is possible (e.g. behaviour difficulties, see Panayiotou et al., 2021). This ensures that we do not (over)control for potential mediators between absences and outcomes. [Table C1](#) in the Online Appendix shows the distribution of these variables.

Sociodemographic characteristics of the household included the highest parental education, highest occupational class, household income, accommodation tenure, rating of the neighbourhood, number of relocations, family composition, household size, number of children in the household, mother's age at birth, child gender and ethnicity.

Child characteristics included cognitive ability, behaviour difficulties, health, birthweight and whether the child was in special care the week after birth. Children's cognitive ability was measured using the English Picture Vocabulary Test (Brimer & Dunn, 1962) to assess verbal vocabulary, the Copying Designs Test to assess visual motor coordination (Rutter et al., 1970) and the Human Figure Drawing Test (Harris, 1963) to assess 'conceptual

**TABLE 1** Distribution of outcomes, weighted and unweighted.

Variable	Proportion/ minimum/ mean/maximum (unweighted)	Standard deviation (unweighted)	Proportion/ minimum/ mean/maximum (weighted)	Standard deviation (weighted)
Educational attainment at age 42 ( <i>N</i> =8535)				
No qualification	11.55	–	12.61	–
Lower-level school qualification	7.66	–	8.18	–
Middle level school qualification	24.82	–	25.38	–
Higher level school qualification	14.90	–	14.95	–
First degree	33.44	–	31.90	–
Higher degree	7.63	–	6.98	–
Dominant social class ( <i>N</i> =9012)				
Salariat class	38.27	–	36.80	–
Intermediate class	20.94	–	20.86	–
Working class	26.41	–	27.71	–
Non-employed	14.48	–	14.62	–
Employment status at age 42 ( <i>N</i> =8505)				
Employed	71.15	–	70.57	–
Self-employed	14.31	–	14.38	–
Other	14.54	–	15.04	–
Gross weekly earnings in £ at age 42 ( <i>N</i> =5798)				
Minimum	34.52	–	34.52	–
Mean	604.89	519.07	593.43	506.80
Maximum	3356.16	–	3356.16	–
Months unemployed ( <i>N</i> =9082)				
Minimum	0.00	–	0.00	–
Mean	2.19	11.56	2.40	12.21
Maximum	120.00	–	120.00	–

*Note:* Samples based on the economic history data (dominant social class and months in unemployment) are larger than samples based on sweep 9 data (educational attainment and earnings) because the economic history data also include retrospective information if individuals participated in sweep 10 but not in sweep 9. The sample for the analysis of months in unemployment is slightly larger than the sample for the dominant social class because individuals who were employed, but whose occupation is unknown, are excluded from the analysis of the dominant social class but included for the analysis of months in unemployment. Outcomes were not imputed.

*Source:* 1970 British Cohort Study.

maturity'. Behavioural difficulties were measured using the Rutter Behavioural Scale, and internalising symptoms using the Malaise Inventory questionnaire, both completed by the mother (Rutter et al., 1970). Children's health was operationalised with the total number of health conditions, including eczema, hay fever, ear discharge, sore throats, snoring, bronchitis, pneumonia, meningitis, hearing difficulty and vision problems. Parent-related characteristics included the following measures: parental educational engagement (whether parents have met with the teacher, whether parents read to the child, frequency of joint family activities), mother's educational aspirations, parenting (mother's attitudes towards child



independence and authoritarian child-rearing), mother's mental health and prenatal risks (frequency of mother's smoking and drinking alcohol during pregnancy).

Finally, we conditioned on school characteristics and school practices: the school type, whether the child is streamed and at which level and whether the child is taught in set groups in literacy and math and at which level.

## Missing data

Systematic differences in item non-response and attrition must be addressed to prevent selection bias when analysing the BCS70 (Mostafa & Wiggins, 2015). We used multiple imputation to address item non-response and inverse probability of attrition weighting to address attrition.

## Multiple imputation

Information on school absences is missing for 14.8% of cohort members. On average, 13% of cohort members have missing information on confounding variables. Except for students' set reading level at age 10 (27% missing), no other variable has more than 20% missing values (see Appendix Table C1). To correct for item non-response, we impute missing values on all variables using multiple imputation based on Categorization and Regression Trees (CART, Burgette & Reiter, 2010) but exclude individuals with imputed scores on outcome variables for the respective analyses because imputed outcomes may add noise to estimates (von Hippel, 2007). CART is a non-parametric recursive algorithm that creates groups with maximum intragroup and minimum intergroup homogeneity using binary splits. The advantage of using CART for multiple imputation is that the algorithm finds the best predictors of missing data from all potential covariates, including non-linear patterns and interactions. We created 20 imputed datasets and calculated standard errors using Rubin's rules.

## Inverse probability of attrition weighting

To correct for selective participation in the later sweeps of BCS70 and missing data on the outcome variables, we weighted cases by the inverse of their probability of leaving the survey or having missing values on the outcome (Hernan & Robins, 2020). Because the number of missing values varies by outcome (varying between  $N=8505$  for employment status and  $N=9082$  for months in unemployment; see Table 1 again), we estimated weights separately for each outcome.

$$\text{Weight}_{oi} = \frac{1}{\Pr(\text{Non-missing}_o | \text{Absence}_i, \text{Controls}_i)}$$

Thus, the weight of person  $i$  for outcome  $o$  is the inverse of the probability that a person with  $i$ 's values on absences and controls has complete information on outcome  $o$ . Using logistic regressions, we estimated the probability of having complete information on the outcome. By weighting the sample, a pseudo-population is created in which loss to follow-up is independent of school absences and all covariates, avoiding bias from systematic attrition based on observed variables. As a result, even though we use slightly different samples for each outcome of interest, the distribution of control variables and absences is consistent across all weighted analyses (see Online Appendix Table E1).

## Analysis methods

For each of the four outcomes, we present bivariate associations with school absences at age 10 and associations adjusted for the theoretically guided confounders. We used multinomial logistic regression to analyse educational attainment and dominant class destination. For the count data of months spent unemployed, we used a negative binomial regression to account for the distribution's skewness (following the approach used by Daly et al., 2015). All analyses are based on multiple imputed data and weighted using the attrition weights described above. To ease interpretation, we present the results of these regressions as average marginal effects (AME).

Earnings at age 42 are only observed for employed individuals, excluding cohort members who are unemployed, inactive or self-employed from the analysis. This could result in biased estimates if employment-based censoring was associated with school absences and earnings (Elwert & Winship, 2014; Heckman, 1974). For example, this would be the case if school absences affected the probability of employment to the extent that only the most capable school absentees were observed with valid earnings data. Therefore, to obtain unbiased estimates of the effect on earnings, we must correct for (1) selective participation in the survey and (2) selection into employment among those individuals who participated in the survey. Again, we estimate the probability of participation in the age 42 survey and the probability of employment using logistic regressions including absences and control variables. Our correction weight is then the inverse of the product of the probability of employment and the probability of survey participation.

Correction weight<sub>*i*</sub>

$$= \frac{1}{\Pr(\text{Participation}|\text{Absence}_i, \text{Controls}_i) * \Pr(\text{Empl}|\text{Absence}_i, \text{Controls}_i, \text{Participation}_i = 1)}$$

For our outcome model on logarithmised earnings, we estimated a linear regression applying this correction weight.

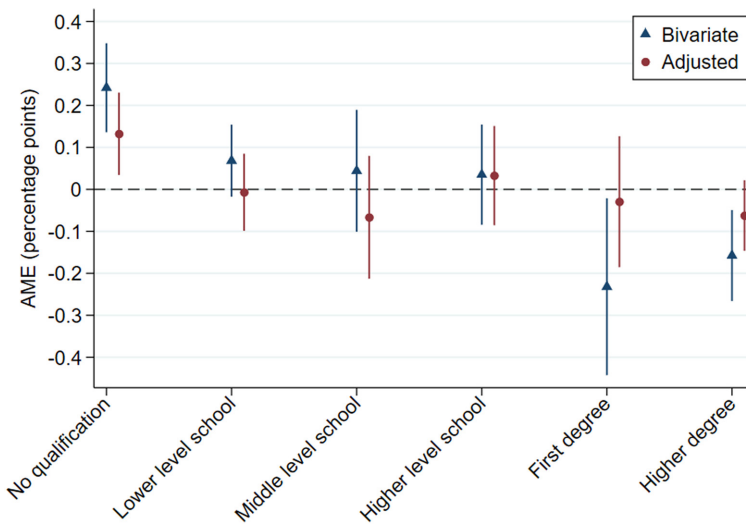
## RESULTS

### Educational attainment

Figure 2 depicts unadjusted associations between school absences and educational attainment (blue triangles) and associations adjusted for confounders (red dots) at age 42. Online Appendix D contains regression coefficients for all covariates.

School absences are associated with a higher likelihood of not having a qualification and a lower likelihood of obtaining a first degree or higher degree. Each additional day of absence is associated with a 0.24 percentage point increase in the likelihood of gaining no qualification (see the leftmost blue dot in Figure 2). Compared with those who did not miss a single day of school, individuals who missed 5 days of school (about the mean of absences of 4.5) have a 1.20 percentage point ( $5 \times 0.24$  percentage point) higher probability of not obtaining any qualification. Those who miss 5 days of school are also 1.16 percentage points less likely to obtain a first degree and 0.79 percentage points less likely to obtain a higher degree. However, these differences in obtaining a lower (AME=0.07, SE=0.04), middle (AME=0.04, SE=0.07) or higher school qualification (AME=0.04,  $b=0.06$ ) are small and statistically non-significant.

To compare effect sizes, it is useful to set these differences in relation to the qualification distribution in the sample (see weighted outcomes in Table 1). In comparison with the



**FIGURE 2** Associations between school absences (days) and educational attainment at age 42. *Source:* 1970 British Cohort Study (BCS70). *Note:*  $N=8535$ . Multiple imputed and weighted to correct for attrition. Vertical lines indicate 95% confidence intervals. Average marginal effects for the association between school absences and educational attainment are calculated based on the regression coefficients of a multinomial logistic regression. The regression coefficients are available in the Online Appendix [Tables D1](#) and [D2](#).

weighted distribution of qualifications, the 1.20 percentage point increase in the likelihood of not obtaining any qualification corresponds to a 9.5% increase  $([12.61 + 1.20]/12.61)$ . Individuals who miss 5 days of school have a 3.6% lower likelihood of obtaining a first degree and an 11.3% lower likelihood of obtaining a higher degree.

After controlling for confounders, differences in not obtaining any qualification are cut in half but remain statistically significant. Individuals who have missed 5 days of school have a 0.66 percentage point (or 5.2% increase) higher probability of not receiving any qualification. The disadvantage of individuals who have missed 5 days of school in obtaining a higher degree is reduced to 0.31 percentage points (or 4.4% reduction) and is no longer statistically significant. Differences in obtaining a first degree vanish entirely.

When considering educational attainment at ages 30, 34 and 38, we find very similar results (see Online Appendix [Figure F1](#)). Individuals with more absences are more likely not to have obtained any qualification and are less likely to have obtained a higher degree.

## Social class destination

School absenteeism is associated with a lower likelihood of being in the highest occupational class and a higher likelihood of being in the lowest occupational class or non-employed (see blue triangles in [Figure 3](#)). Individuals who miss 5 days of school are 2.1 percentage points (or 5.7%) less likely to be in the salariat class, 1.1 percentage points (or 4.0%) more likely to be in the working class, and 1.3 percentage points (or 8.9%) more likely to be non-employed than those who do not miss a single day.

Again, differences diminish substantially when confounders are considered (see red dots in [Figure 3](#)). Nonetheless, there remains a statistically significant and relevantly elevated likelihood of non-employment in the more absent individuals at age 10. Even after adjusting for confounders, individuals who have missed 5 days of school are 0.6

percentage points (or 4.1%) more likely to be non-employed. The differences between the remaining occupational classes vanish.

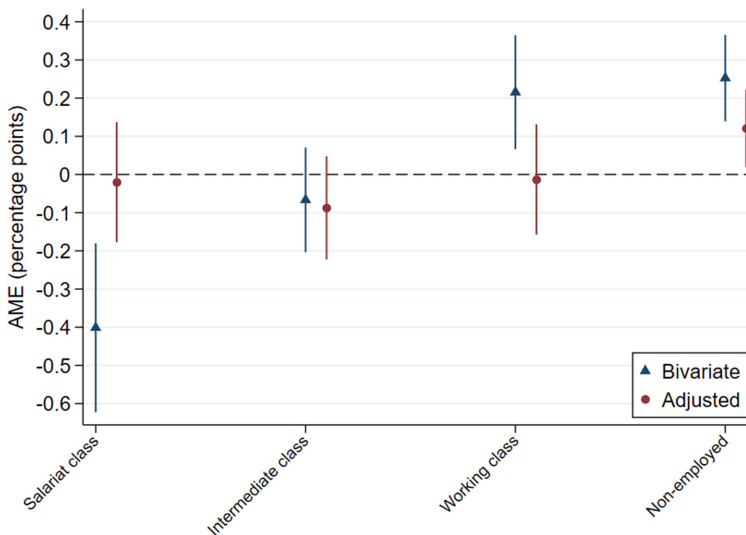
We found similar results when examining individuals' social class destination at ages 30, 34, 38 and 42 rather than the dominant social class from ages 32 to 42 (see Online Appendix [Figure F2](#)). This indicates that the negative impact of school absences on non-employment emerges early in a person's career and then remains relatively stable. About 20% of the adjusted association between absences and the probability of being predominantly non-employed in adulthood is attributable to educational attainment at age 30 (see Online Appendix [Table G1](#)).

## Unemployment

School absenteeism is associated with increased unemployment duration. Individuals who missed 5 days of school were unemployed 8.1 days longer ( $0.054 \times 5 \times 30$  days) between the ages of 32 and 42 than those who did not miss school ( $p=0.048$ , see left part of [Table 2](#)). Adjusted for confounders, this disadvantage resulting from school absence is reduced to 6.8 days and is no longer statistically significant.

## Earnings

School absenteeism is associated with slightly reduced earnings. Individuals who missed 5 days of school at age 10 earned 2.0% ( $-0.004 \times 5$ ) less at age 42 than those who did not miss school ( $p=0.042$ , see right part of [Table 2](#)). However, after adjusting for confounders, there are no significant differences in earnings. Similarly, we find no significant



**FIGURE 3** Associations between school absences (days) and social class destination.

Source: BCS. Note:  $N=9012$ . Multiple imputed and weighted to correct for attrition. Vertical lines indicate the 95% confidence interval. Average marginal effects for the association between school absences and social class destination are calculated based on the regression coefficients of a multinomial logistic regression. The regression coefficients are available in Appendix [Tables D3](#) and [D4](#).

**TABLE 2** Associations between school absences (days), months in unemployment and weekly gross earnings (log).

	Months in unemployment		Weekly gross earnings (log)	
	AME	SE	Regression coefficient	SE
Bivariate	0.054*	0.028	-0.004*	0.002
Adjusted	0.045	0.030	0.000	0.002
<i>N</i>	9082		5798	

Note: Significance levels: \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$ .

*Unemployment*: Multiple imputed and weighted to correct for attrition. All regression coefficients are available in the Online Appendix [Table D5](#).

*Earnings*: Multiple imputed and weighted to correct for attrition and selection into employment. All regression coefficients are available in the Online Appendix [Table D6](#).

Source: 1970 British Cohort Study.

Abbreviations: AME, Average marginal effects; SE, standard error.

differences in earnings at ages 30, 34 or 38 after adjusting for confounders (see Online Appendix [Table F1](#)).

## DISCUSSION

Our paper examined long-term associations between school absences and educational attainment and labour market outcomes. We used BCS70 data to examine the association between school absences at age 10 and individuals' highest educational qualification, social class destination, unemployment and earnings at age 42, adjusting for a comprehensive set of confounders. We found small but significant negative associations between absences measured in late childhood and educational attainment and class destination in mid-adulthood. Predominantly, absences increased the likelihood of acquiring no qualifications and being non-employed. There was a negligible association between absences and the type of qualification attained and the class destination of employed individuals. Therefore, being absent from school at age 10 has negative long-term associations with not acquiring any academic or vocational credentials and accessing the labour market. Although we found a negative association between school absences and time spent in unemployment, the effect sizes were statistically non-significant at conventional 5% criteria. We found no long-term association between absences and earnings.

Our findings are consistent with previous research on the immediate short-term effects of school absences on the risk of being not in employment, education or training after leaving school in the UK context (Attwood & Croll, 2006, 2015; Department for Education, 2018; Furlong, 2006; Hibbett et al., 1990), but we provide new evidence that these consequences extend to mid-adulthood. They also align with US studies indicating negative consequences of absences on educational and civic participation (Ansari et al., 2020; Liu et al., 2021). Our findings regarding the consequences of school absences on final educational attainment are also consistent with those of Cattan et al. (2022) for the Swedish context, the only other study examining long-term associations between school absences and educational and labour market outcomes in mid-adulthood. Even though absences have the expected negative association with all labour market outcomes in both studies, we found statistically significant effects on non-employment but not earnings, whereas Cattan et al. (2022) found the opposite pattern.

Overall, it is important to note that our findings of long-term associations between school absences and educational and labour market outcomes are based on absences measured

at one time point in late childhood. This suggests that the negative association between early absences and education, training and the labour market was not fully addressed and carried forward into adulthood. Frequently absent students may, therefore, be unable to escape their initial disadvantages and catch up with their peers in terms of qualifications and class destinations over the life course.

Several caveats must be considered when interpreting the results. First, long-term associations between school absences and outcomes in adulthood may not reflect the causal effect of absences. While we control for important confounders for school absenteeism that predict educational and labour market outcomes, such as children's cognitive ability, behavioural problems and health, we cannot exclude the possibility of unmeasured confounding.

Second, we only measured absences for a single school term at age 10 and did not capture absences throughout the entire school career. However, early absences strongly predict later absences and are thus a good indicator of average absences across the educational career (Ansari & Pianta, 2019). It is further reasonable to assume that sustained exposure to school absences over time (i.e. cumulative absenteeism) has a greater impact on outcomes (Ansari & Gottfried, 2021), which cannot be addressed with a snapshot measure of absenteeism at age 10. Consequently, our findings may underestimate the impact of school absences on educational attainment and labour market outcomes.

Third, teachers provided information on absences at age 10 and may not have accurately reported children's number of absence days. This may result from recall bias or other context-based biases against the child. Typically, survey data on school absences do not accurately reflect administrative school data. For example, Keppens et al. (2019) found that the correlation between self-reported absences and administrative records is only 0.23. However, owing to a lack of social desirability bias, we can assume that information on school absences provided by the teacher will be more accurate than information provided by the pupil or parent.

Fourth, examining the association between absences and long-term outcomes necessitates using these unique historical data. Educational contexts have changed over the decades, and this may affect the strength of the association between absences and long-term outcomes in a more recent population of students. However, evidence from different contexts, stages and timepoints shows that absences are consistently associated with short-term educational outcomes (Department for Education, 2016; Gottfried, 2010; Klein et al., 2022; Smerillo et al., 2018).

Given these limitations, it will be important for future research to replicate these findings based on more recent data, more precise and longitudinal measures of absences and research designs that allow a stronger causal identification. Future research may also disentangle the mediating pathways and shed more light on the mechanisms linking early absences to outcomes in mid-adulthood.

Leaving these limitations aside, our findings of the long-lasting consequences of being absent from school for individuals' risk of gaining no qualifications and being out of the labour force in mid-adulthood have significant implications for policy and practice. Given Covid-19-related decreases in school attendance, particularly among vulnerable groups, there is an urgent need to design targeted interventions to reduce school absenteeism and break the cycle of intergenerational disadvantage (Department for Education, 2022). Interventions may focus on mitigating the immediate negative impact of absences on learning and the social development of children. If learning loss is the driving mechanism, providing children with the means to make up schoolwork missed owing to absences will be important. The negative impact of these absences can be mitigated, for instance, by providing additional school support through tutoring during and after school or by addressing disengagement through social activities and supportive peer and teacher interactions (Korpershoek et al., 2020). Crucially, there should be a focus on addressing the multiple risks factors, such as experiences of poverty, that lead to absenteeism. Given that illness is the primary cause of absences at age 10 in our sample, it

is plausible to assume that underlying health issues affect future educational and employment opportunities. In addition to addressing learning loss, policies should implement early interventions to improve the health and wellbeing of children who frequently miss school owing to health issues. Finally, policy and practice should provide more targeted opportunities for life-long learning so chronically absent students can acquire the skills necessary for future success in education and the labour market later in life.

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## CONFLICT OF INTEREST STATEMENT

The authors hereby declare that there is no conflict of interest.

## DATA AVAILABILITY STATEMENT

The data of the 1970 British Cohort Study is openly available in UK Data Service at <https://ukdataservice.ac.uk/>, reference numbers 2666, 2699, 3723, 5558, 5585, 6557, 6943 and 7473. Stata code to replicate the results is available at <https://osf.io/6nyp4/>.

## ETHICS STATEMENT

The project gained ethical approval from the Strathclyde Institute of Education Ethics Committee. The research presented in this article was carried out with due consideration to all relevant ethical issues and in line with BERA's Ethical Guidelines for Educational Research.

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## ENDNOTES

<sup>1</sup> There are also measures of absences at age 16. However, these have substantial problems. The teacher-reported absences at age 16 are only available for one-third of the pupils owing to a teacher's strike when the survey took place. Pupil reported absences also only asked about absences other than those due to illness.

<sup>2</sup> Assuming a term has 65 school days, students missed an average of 6.9% of school days. This compares with 6.2% in maintained primary schools in England in the mid-1990s and 6.7% in the spring term of 2021/2022 (see Online Appendix Table B1).

<sup>3</sup> We follow the naming conventions in Plewis and Bartley (2014).

<sup>4</sup> Cohort members in each of the four groups spent, on average, more than 80% of these 120 months in the respective categories.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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