

The Long-Term Benefits of Adolescent School Engagement for Adult Educational and Employment

Outcomes

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CRedit Statement

JES: conceptualization, data curation, formal analyses, visualization, writing - original draft, writing – review and editing. GDU: conceptualization, data curation, writing – original draft, writing – review and editing. IS: conceptualization, writing – original draft, writing - review and editing.

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Abstract

School engagement in adolescence is often associated with better academic performance at school, but what are the longitudinal associations between school engagement and adult educational and employment status? The current study explored these longitudinal associations using data spanning 40-years of life, from the 1970 British cohort study. School engagement at 16-years was used to predict highest educational level at age 34-years, and socioeconomic status and income at age 34- and 46-years, controlling for childhood socioeconomic status, cognitive ability, gender, and ethnic minority status, collected at ages 5- or 10-years, [and for educational qualifications at 16-years](#). The sample of 13,135 individuals were born in 1970, were mainly White (96%) and were identified at age 5-years as being 48% female. Longitudinal structural equation models revealed that adolescent school engagement had a persistent, positive impact on adult educational and employment outcomes after individual differences were controlled for. The results are interpreted using the perspective that school engagement can channel resources which are important for later educational and occupational success.

Key words

School engagement, socioeconomic status, income, longitudinal, birth cohort study

Public Significance Statement

Being more engaged in school in adolescence has long term benefits for obtaining educational and occupational success in adulthood. The competencies that people use for engaging in school may be transferrable to academic achievement and doing well in employment. Engagement also works to channel resources from the environment to individuals – creating greater career opportunities in adulthood.

The Long-Term Benefits of Adolescent School Engagement on Adult Employment Outcomes

People's engagement in schooling during adolescence has been linked to higher levels of educational participation and employment status in young adulthood (Heckhausen et al., 2013; Symonds et al., 2016) and middle adulthood (Abbott-Chapman et al., 2014).

Developing positive feelings about school can impact the growth of educational aspirations (Morrison Gutman & Schoon, 2018) which in turn predicts later employment status (Sanders et al., 2020), suggesting that the attitudes people form in adolescence about schooling are important for promoting later engagement with education and working. Behavioural regulation in childhood is also found to have long-lasting impacts on adult educational and employment outcomes (Schoon et al., 2021), suggesting that the personal competencies underpinning behavioural engagement at school might also help people manage themselves in third level education and at work. In this perspective, engagement draws on set of competencies that are acquired early in the life course but that also can be developed as people age.

The development of engagement occurs in a broader sociocultural context, wherein people's school engagement and later employment and educational outcomes are associated with gender, childhood cognitive ability, parental education, and parental occupational status (Heckhausen et al., 2013; Morrison Gutman & Schoon, 2018; Schoon et al., 2021). Here, social contexts create a system of opportunities for people to develop their attitudes and behaviours in a dynamic interplay with environmental resources and demands (Salmela-Aro & Upadaya, 2013). More research is needed to unpack the dynamics of how school engagement impacts adult education and employment outcomes, with attention to development in sociocultural context (Wang et al., 2019). Furthermore, the role of engagement as a developmental resource needs to be better defined, to understand how links

form between sociocultural factors, school engagement, and adult educational and employment outcomes.

The current study aims to [identify the long-term associations of adolescent school engagement with adult occupational and educational outcomes, underpinned by a theoretical rationale for these associations](#). First, we offer a conceptual explanation of engagement as a channel for resources which is underpinned by personal competencies, drawing on the literature from educational and occupational psychology. Second, the study tests the longitudinal associations observed in other studies using 1970 British Cohort Study data, which enables the assumed pathways between school engagement and adult occupational and educational outcomes to be explored in a large-scale, nationally representative sample across the first 46-years of life. Third, the study extends previous work on employment outcomes by testing a range of functional and developmental factors, with the functional factors being people's employment status and income, and the developmental factors being people's self-reported competencies in teamwork and communication, and ability to learn new things and solve problems at work. [Using this holistic perspective on employment outcomes and informed by our perspective on engagement underpinned by developmental competencies and acting as a channel for resources](#), the study contributes to theory and evidence on how school engagement operates within the life span.

Competencies for Engagement and Engagement as a Resource Channel

Engagement has been defined as the quality of people's participation or involvement in activities (Skinner, 2016). Engagement can be conceptualized as a multidimensional construct, comprising attitudes and feelings that are positively oriented towards the activity (emotional engagement), cognitive strategies and actions necessary for being involved with the activity (cognitive engagement), and behavioural participation in the activity (behavioural engagement) (Fredricks et al., 2004; Wang & Degol, 2014). Engagement can also be

conceptualised as multilevel, with engagement in broader activities (e.g., schooling) encompassing engagement with multiple narrower activities (e.g., learning maths, playing sport at school) in a hierarchical structure (Skinner & Pitzer, 2012; Wong & Liem, 2021). There is also a time dimension to engagement, with momentary engagement occurring across seconds and minutes, and longer-term patterns of engagement forming as attitudes and behaviours consolidate across weeks, months, and years (Symonds et al., 2021).

In the current study, we are interested in adolescents' typical level of engagement with school. Conceptualising school engagement as a trait that is relatively stable across environmental conditions, rather than as a momentary state that fluctuates with every activity, enables stronger theoretical connections between school engagement and the engagement competencies that develop across time, and to the potential long-term outcomes of school engagement. In this perspective, school engagement includes adolescents' typical feelings about school and classrooms, and their typical cognitive and behavioural participation and cooperation in classroom activities (Ladd & Dinella, 2009; Wong & Liem, 2021).

Engagement Competencies

Building on these prior definitions of engagement, we forefront in this paper the competencies necessary for engagement that develop across the life course. In line with the multidimensional model of engagement, we can imagine that competencies for engagement include motivational and emotional regulation strategies, cognitive learning strategies, and behavioural control strategies, which can help people better engage in schooling in adolescence. Research on engagement interventions documents that helping people learn how to better manage their behaviour at school and develop their interest in learning can protect them from becoming disaffected with schoolwork and dropping out of school (Archambault et al., 2019; Torsney & Symonds, 2019). This illustrates how competencies for momentary

engagement (e.g., behavioural control) can impact longer-term patterns of engagement with schooling.

Drawing on our perspective of engagement competencies, we anticipate that the core skills involved in engaging in school, such as self-regulation of motivation, emotion, and behaviour, are also valuable for maintaining engagement in third level education and employment (Bakker & Albrecht, 2018). Giving some support to this assumption, longitudinal studies have found that adolescents' ability to stay on task, feel motivated to work, and have educational goals, (Heckhausen et al., 2013), are positively associated with being in employment in adulthood. These engagement competencies develop early in the life course, as observed by Schoon et al. (2021) who found that childhood behavioural regulation reported by mothers had a positive impact on adult employment outcomes at age 42-years, after controlling for gender, childhood cognition, and family socioeconomic status.

Engagement as a Channel

We also suggest in this paper that engagement acts as a channel that directs resources to individuals, which is a second adaptive function of engagement in the life course. This suggestion is made acknowledging that the resources channelled by engagement can be helpful but also potentially harmful in the longer-term. [For example, engaging in education can channel qualifications and future income generating opportunities to individuals, just as engaging in crime can channel immediate financial resources but also potential long-term negative consequences.](#) We also imagine that engagement itself can be channelled by the resources and demands available in sociocultural context, in line with Salmela-Aro's (2009) description of how goals are channelled by the environment.

The concept of engagement as a channel is based on the notion that engagement moderates the flow of resources to individuals when those resources can be accrued through person-environment interaction (Neufeld et al., 2006). For example, a child who engages

more in maths practice at home may do well in their math exam, thereby gaining more emotional support from their teacher. Accruing resources through engagement can be intentional (e.g., an adolescent studying for their school exams) and unintentional (e.g., a child winning a surprize prize for good behaviour in class). In the school context, engaging in school can channel social resources (e.g., teachers having high expectations for student success; and peers helping each other solve academic problems), equipment (e.g., having access to high quality schoolbooks), and opportunities to accrue social, educational, and occupational status (e.g., access to selective societies, school leaving qualifications). [An important resource channelled by school engagement is educational qualifications, which act as a gateway to further and higher education. In the same British birth cohort, Sullivan et al. \(2018\) found that having higher achievement in school examinations at 16-years was associated with higher social class in adulthood, independent of childhood social class and cognitive ability.](#)

The perspective of accruing resources through engagement (i.e., engagement pulling resources to the individual) is interlinked with the notion of resources being available to promote engagement (Salmela-Aro & Upadyaya, 2013) ([i.e., resources pushing engagement for the individual](#)). When resources are pulled towards the individual, it may follow that having more of these resources can encourage people to engage. For example, deeper cognitive engagement in learning may result from and contribute to children's cognitive skill development. In turn, children's cognitive skills may be promoted by and contribute to parental investment in education (Wang et al., 2019). This presents a reciprocal interaction between resources and engagement, that can deepen the channel across time.

Over the life span, this reciprocal relationship between engagement and environmental resources can manifest in spirals of engagement, where engagement intensifies in tandem with an increase in resources for promoting engagement (Skinner & Pitzer, 2012).

During adolescence, these spirals of engagement (and disaffection) are observed in British national cohort data as trajectories of interest in schoolwork that can remain stable, increase, or decrease across time (Symonds et al., 2016). [Experiencing an increase in schoolwork engagement is associated with more positive education and employment outcomes in young adulthood, as well as enhanced mental health \(Symonds et al., 2016\)](#). This perspective on engagement as a channel highlights the importance of environmental transitions (such as the transition from school to higher education) in shaping trajectories of engagement across time, and the importance of engaging with transition planning to help people achieve successful post-transition outcomes (Sanderson, 2020).

Engagement in Sociocultural Context

Drawing on the development-in-sociocultural-context model of engagement in learning (Wang et al., 2019), we acknowledge that engagement is also impacted by the sociocultural context of individual development. Herein, individual socioeconomic resources, socialising agents including parents and teachers, and the social role system of the cultural milieu, influence the development of competencies important for engagement including social, emotional, and cognitive skills (Wang et al., 2019). Below we briefly review some key sociocultural and individual differences that are assumed to impact school engagement and adult education and employment outcomes, to further explore how engagement operates in a life course framework.

Socioeconomic Status

Growing up in conditions of socioeconomic disadvantage can impact adolescent school engagement, for example through the transmission of low aspirations for higher education and by encouraging a perception of being bound by limited opportunities and resources (Eccles, 2008; Schoon, 2007). Not only does individual family socioeconomic status impact engagement, so too does the socioeconomic status of schools. Attending a

higher income school can also have a positive impact on school engagement, as well as reducing the risks of early school leaving and truancy (Covell et al., 2011). Inversely, attending a lower income school can have a long-term detrimental impact on college participation, over and above individual levels of family socioeconomic disadvantage, possibly because of a climate of low expectations amongst peer groups and between students and teachers (Smyth & McCoy, 2021).

Cognitive Ability

People's ability to reflect, to process information, and to reason, is central to cognitive engagement (Wang et al., 2019) and the metacognitive monitoring of learning in individual and social situations (Järvelä et al., 2021). Having effective cognitive functioning is an advantage that can facilitate school and work engagement, achievement, and employment opportunities. People's ability to perform well on cognitive assessments has been positively associated with school performance in childhood (Blums, 2017) and job performance in adulthood (Van Iddekinge et al., 2018). The long-term impact of children's cognitive ability on adult occupational status is evident even after controlling for gender and childhood socioeconomic status (Schoon et al., 2021).

Gender

Gender differences in school engagement in adolescence have been documented internationally, with girls typically having higher self-reported engagement than boys (Lam et al., 2012). There are also qualitative gender differences in engagement, with boys and girls giving different reasons for engaging in school (Fredricks et al., 2017). At the school to work transition, men's and women's movement into the labour market is marked by gender inequality especially in income (Amate-Fortes et al., 2021). Therefore, gender is an important factor to consider in longitudinal analyses of school engagement and adult occupational outcomes.

Ethnicity

In the United Kingdom, the setting of the current study, being a White, working-class male is often associated with having lower educational aspirations than other ethnic groups (Berrington et al., 2016). In the Next Steps nationally representative study of young people in England, adolescents who had deepening trajectories of disengagement from school were also more likely to be White compared to any other ethnic category (Symonds et al., 2016). In adulthood, although ethnic minority people are found to have lower incomes on average in the UK, there are no ethnic differences in employment status or earnings amongst highly qualified graduates (Zwysen & Longhi, 2018), suggesting that for some, these higher levels of school engagement translate into successful employment outcomes. These results highlight the need to consider ethnicity as a factor in longitudinal analyses of school engagement and adult education and employment outcomes.

The Current Study

The current study aimed to extend the evidence base on the role of engagement in the life course, by studying the longitudinal associations between school engagement and adult education and employment outcomes, within a broader developmental context of childhood socioeconomic status, childhood cognitive ability, gender, and ethnicity. [We also considered the role of educational qualifications at 16-years.](#) The study is exploratory, and not hypothesis driven, although we assume that there will be positive associations between school engagement and adult education and employment outcomes, based on other literature documenting similar associations (Abbott-Chapman et al., 2014; Heckhausen et al., 2013; Symonds et al., 2016). A strength of the current study is that it extends on these prior investigations by examining the pathways across childhood to middle adulthood, in a nationally representative sample. Furthermore, the study considers the residual impact of school engagement on adult employment outcomes in mid-life, after controlling for the

impact of school engagement on adult employment outcomes in earlier adulthood; demonstrating whether school engagement has a long-term persistent impact on adult development. The overarching research question guiding the analysis is: to what extent does adolescent school engagement impact adult education and employment outcomes, controlling for gender, ethnicity, childhood social advantage, childhood cognitive ability, and educational qualifications at 16-years?

Methods

Participants

The 1970 British Birth Cohort study (BCS70) recruited all people born in a single week in 1970 in the United Kingdom. Study waves began at birth (midwife questionnaire), and were continued at the ages of 5, 10, 16, 26, 30, 34, 38, 42, and 46 years old. The BCS70 is managed by the Centre for Longitudinal Studies (CLS) at University College London and funded by the Economic and Social Research Council. Data are freely available to bona fide researchers on application to the UK Data Archive. The current study uses data from participants born in England, Scotland, and Wales, at ages 5-years (N = 13,071, 1975), 10-years (N = 14,874, 1980), 16-years (N = 11,621, 1986), 34-years (N = 9656, 2004) (Elliott & Shepherd, 2006) and 46-years (N = 6,227, 2016). Northern Ireland participants were not surveyed in adolescence therefore they had no data on school engagement and were excluded from the analysis. Participants with available data for analysis (N = 13,135) were mixed in gender (48.2 % women), were mainly White (95.7%), and had a range of socioeconomic backgrounds in childhood (see Table 1 for more details).

Procedures

Data Collection Procedures

Data on participants' gender, ethnicity, and socioeconomic backgrounds at 5-years and 10-years were collected from participants' parents during a home interview (Elliott &

Shepherd, 2006). Cognitive assessment data at 10-years were collected from participants' teachers who administered the British Ability Scales (Elliot et al., 1979) in schools.

Participants were interviewed at age 16-years about their school engagement, and at ages 34-years and 46-years about their employment outcomes. Data were collected by fieldworkers and fieldwork agencies and were prepared for archiving by the study investigators (Elliott & Shepherd, 2006). The current study authors obtained the data from the UK data archive, merged the files, and cleaned the variables for analysis.

Measures

Gender

Child gender was identified at 5-years by the interviewer.

Ethnicity

Child ethnicity was collected at 5-years by the interviewer. For the current analysis, the available ethnic groups of European UK (capturing the predominantly White indigenous UK population of the 1970s), European Other, West Indian, Indian-Pakistani, Other Asian, African, Other, were recoded into (1) Ethnic Majority (European UK) and (2) Ethnic Minority (all other groups). The collapse of the ethnic minority categories enabled a more robust analysis of being an ethnic minority due to the small sample size of ethnic minorities in the sample (4.2%).

Childhood Socioeconomic Status

Childhood socioeconomic status was created as a latent factor using four indicators: (1) social class of mother, (2) social class of father, (3) highest known parental educational level (of any parent), and (4) parental income. Parental social class was measured at age 5-years using a 6-class classification system: (1) unskilled, (2) partially unskilled, (3) skilled manual, (4) skilled non-manual, (5) managerial, (6) professional. Highest known parental education at age 5-years was measured as (1) no qualification, (2) vocational qualification,

(3) O Level (school leaving qualification for lower secondary education, (4) A Level (school leaving qualification for upper secondary education) and (5) university degree. The placement of vocational qualifications as lower than school leaving qualifications reflects the historical context of the 1960s-1970s in the UK, where a tripartite education system streamed young people into vocational or academic tracks, with most vocational qualifications being obtained as an alternative to academic school leaving qualifications as well as some further education vocational programmes being available (Steinmann, 1999). Total gross weekly family income at age 10-years (earliest available data) was measured using a 7-point scale ranging from (1) under £35 per week, to (9) £250 or more per week. The social disadvantage items (1-4) fit the latent variable well ($b = .53, .74, .76, .59$) and had good internal validity ($\alpha = .75$).

Childhood Cognitive Ability

At age 10-years, children were assessed in schools by their teachers, on their ability to identify similar words (21 items), define words (37 items), recall digits (34 items), and identify patterns of shapes (28-items), using the British Ability Scales (BAS) (Elliot et al., 1979). These tests were designed to capture verbal reasoning, verbal knowledge, short-term auditory memory, and inductive non-verbal reasoning. In the current analysis, the factor score for children's overall performance on the BAS tests was used to indicate cognitive ability.

Adolescent School Engagement

School engagement at age 16-years was measured using five self-report items: (1) Always willing to help the teacher, (2) Do not like school (reversed), (3) Feel school is largely a waste of time (reversed), (4) Quiet in classroom and get on with work, (5) Find it difficult to keep mind on work (reversed). Together, these items represented a mixture of emotional, cognitive, and behavioural aspects of engagement, in line with other 'mixed' scales of engagement often used in longitudinal studies (Salmela-Aro et al., 2021). Items

were measured on a 3-point scale (not true at all, partly true, very true). Reliability was reasonable with $\alpha = .67$ and items 1-5 loading at $b = .45, .69, .63, .42,$ and $.50$ in the confirmatory factor analysis run for the main model.

Adolescent Educational Qualifications

Educational qualifications at age 16-years were added to the dataset at the end of the school year. Two main types of school leaving qualifications were included, Ordinary Levels (O Levels: more academic) and Certificate of Secondary Education (CSE: less academic). CSE qualifications were measured as 1 (highest) to 5 (lowest), and O Level qualifications were measured as A (highest) to D (lowest). A CSE Grade 1 was deemed equivalent to an O Level grade A, B, or C (Sullivan et al., 2018). Adapting the method used with the same BCS70 data by Sullivan et al. (2018), we recoded the qualifications variables into a three-point scale for each of the three main subjects: English literature, English language, and mathematics (3 = has an O Level grade A, B, or C, or a CSE grade 1; 2 = has an O Level grade D or E, or CSE grades 2-5; 1 = has no O Level or CSE).

Adult Educational Outcomes

Highest educational qualification in adulthood was represented using a single item coded by the BCS70 study team at age 34-years. Qualifications ranged from 0 = none, 2 = lower-level school leaving qualification at age 15/16-years, 3 = higher-level school leaving qualification at age 15/16-years, 4 = advanced school leaving qualification at age 18/19-years, 4 = undergraduate degree or diploma, 5 = postgraduate degree.

Adult Employment Outcomes

Four variables represented adult employment outcomes. First, social class was coded by the BCS70 study team into the UK National Statistics Socio-economic Classification system (NS-SEC) and derived into analytic ordinal categories for use in a linear analysis. The variable was reverse coded for the current analysis so that higher values represented higher

status professions. The scale was: (1) never worked and long-term unemployed (2) routine (3) semi-routine (4) lower supervisory and technical (5) small employers and own account workers (6) intermediate (7) lower managerial and professional (8) higher managerial and professional. Second, annual gross pay was calculated using variables for self-reported gross pay and gross pay period. The annual gross pay amounts were standardized into units of 10,000 until the final unit of 150,000 and above used to help normalise the distribution (range 1 – 15). Social class and income were measured at age 34-years and 46-years.

Second, at age 34-years, we included four items representing work relational skills and work cognitive skills. All items were measured on a three-point scale (1 = poor, 2 = fair, 3 = good). Participants were asked to rate how good they were at communicating with others, working in a team, learning new skills, and problem solving. The first two items were modelled together as relational skills, and the latter two items were modelled together as cognitive skills. Because there were only two items for each variable, the internal reliability was low. However, the items loaded well onto the latent variables at .70 and .66 (relational skills) and .70 and .72 (cognitive skills). Furthermore, the correlation between relational and cognitive skills suggested that these variables, although related, were independent of each other ($r = .39, p = < .001$). As the main results demonstrate, there was a different pattern of associations between the two skill types and gender, further supporting our decision to model these separately.

Analysis Plan

SPSS version 27 was used for data cleaning. Statistical models were conducted in Mplus version 8.6. The study was not preregistered. A single structural equation model (SEM) was computed to identify longitudinal associations between the study variables. Missing data were handled using full information maximum likelihood estimation (FIML) which produces estimates using all available data, avoiding the need for case wise deletion

due to missingness on the outcome variables (Enders & Bandalos, 2001). In the SEM, the distal outcomes were the adult employment variables. Adult social class at age 46-years-old was regressed on adult social class at age 34-years-old, and adult income at age 46-years-old was regressed on adult income at age 34-years-old. Adult social class and income at ages 46-years-old and 34-years-old and work relational and cognitive skills at age 34-years-old, were regressed on school engagement, educational qualifications at 16-years, childhood social advantage, childhood cognitive ability, gender, and ethnicity. Adult outcomes were associated with each other within waves. Educational qualifications at 16-years were regressed on school engagement, childhood cognitive ability, childhood social class, gender, and ethnicity. School engagement was regressed on childhood cognitive ability, childhood social class, gender, and ethnicity. Finally, childhood cognitive ability was regressed on childhood social class, gender, and ethnicity. School engagement, educational qualifications at 16-years and childhood social advantage were built as latent factors using the items specified in the measures section. Together, these longitudinal and cross-sectional associations modelled the impact of adolescent school engagement on adult employment outcomes, controlling for educational qualifications at 16-years, childhood social advantage, childhood cognitive ability, gender, and ethnicity (Figure 1): addressing our overarching research question.

Results

Unconditional correlations between the study variables can be viewed in Table 1. The structural equation model (SEM) fit the data well with a Comparative Fit Index (CFI) of .96, a Root Mean Square Error of Approximation (RMSEA) of .02 (Hu & Bentler, 1999), and a Standard Root Mean Square Residual (SRMR) of .03. The Chi Square result was 1509.62(186), $p = .000$, with significance likely due to the large sample size. The five latent variables of socioeconomic disadvantage, school engagement, qualifications at 16-years,

work relational skill, and work cognitive skill, each had good factor loadings ranging from .41 to .82 (Table 2). Below we report the SEM results for the systems of childhood and adolescent variables, followed by the impact of school engagement on adult education and employment outcomes, following the structure depicted in Figure 1. Only associations of $b = .10$ or above are reported, given that even negligible associations (e.g., $b = .05$) were significant due to the large sample size.

Childhood Factors: The Role of Context

At age 5-years, being an ethnic majority child was positively associated with being in a family with higher socioeconomic status ($b = .10$, $SE = .01$, $t = 9.22$, $p < .001$). As can be observed from the correlation matrix (Table 1), there were no associations between child gender and socioeconomic status or ethnicity therefore these links were not modelled. Cognitive ability at age 10-years was positively predicted by socioeconomic advantage and was negatively predicted by being female (see Table 3).

School Engagement and Educational Qualifications in Adolescence

The impact of childhood factors on school engagement and educational qualifications at 16-years can be observed in Table 3. School engagement was positively predicted by socioeconomic advantage and by being female. Cognitive ability and ethnic majority/minority status did not contribute to school engagement. Educational qualifications at 16-years were most strongly predicted by cognitive ability at age 10-years then by school engagement. Socioeconomic advantage in childhood and being female also positively predicted educational qualifications at 16-years. educational qualifications at 16-years were negatively impacted by being an ethnic majority.

Adult Educational Outcomes

Highest qualification at age 34-years was positively impacted by school engagement, qualifications at 16-years, cognitive ability, and socioeconomic advantage (see Table 4).

There was no association with being female, and a negative impact of being an ethnic majority.

Adult Employment Outcomes at 34-Years

At age 34-years, relational skills at work were most strongly predicted by school engagement. There was very little, or no impact of childhood socioeconomic advantage, cognitive ability, gender, or ethnicity, on relational skills at work. Cognitive skills at work were predicted by school engagement, qualifications at age 16-years, and childhood cognitive ability. There was also a small positive impact of being an ethnic majority, but no impact of gender nor socioeconomic advantage.

Social class and income at age 34-years were both predicted by school engagement, qualifications at 16-years, and socioeconomic advantage. School engagement, qualifications at 16-years, and socioeconomic advantage, were more impactful for social class compared to income. Childhood cognitive ability had a positive impact on social class at 34-years, but not on income at 34-years after controlling for qualifications at 16-years. Being female was moderately associated with lower income at age 34-years. The statistics for the employment outcomes at 34-years are displayed in Table 4.

Adult Employment Outcomes at 46-Years

Social class and income at 46-years were both moderately associated with prior social class and income, suggesting both stability and change within the sample. Social class was not predicted by school engagement, gender, nor ethnicity. Instead, social class was predicted by qualifications at 16-years and very weakly by childhood socioeconomic advantage. Higher income was predicted most strongly by being male and by being an ethnic minority. There were also weak independent effects of qualifications at 16-years and school engagement on income at age 46-years. The employment outcome predictors and their impact are listed in Table 5.

Discussion

Using nationally representative data from the 1970 British Cohort Study (BCS70) capturing 40-years of individual development, we examined the longitudinal associations between adolescent school engagement and adult educational and employment outcomes. Using a structural equation model (SEM) we observed that there was a consistent positive impact of school engagement on adult educational and employment outcomes, after controlling for individual differences in school leaving qualifications, childhood socioeconomic advantage, gender, ethnicity, and childhood cognitive ability. School engagement in adolescence was predicted by childhood socioeconomic advantage, by being female, and by being an ethnic minority, but had little contribution from childhood cognitive ability. School leaving qualifications at 16-years were predicted by school engagement, childhood cognitive ability and socioeconomic advantage, and by being female.

We also observed a persistent impact of childhood socioeconomic advantage on adult educational and employment outcomes, but no impact on adult work relational and cognitive skills. Cognitive ability in childhood was a further important predictor of adult outcomes, positively impacting work cognitive skills, and social class and income at age 34-years and 46-years. Being female weakly predicted highest educational qualifications but was negatively associated with income at age 34-years and 46-years. Finally, there was a consistent negative impact of being an ethnic majority on most of the adolescent and adult outcomes, with only childhood cognitive ability and work relational and cognitive skills being positively predicted by being an ethnic majority. Despite these rich findings, because of space limitations, we focus our discussion on the role of school engagement.

Fostering Engagement in Development

To understand the impact of school engagement on the adult outcomes, we must consider how school engagement was measured in this study. In the BCS70, participants

were asked to what extent they were always willing to help the teacher, quietly carried out their work, kept their mind on work, felt that school was a waste of time, and did not like school (the last two items were reverse coded in our analyses). These questions are tapping into trait engagement: students' tendency for cognitive and behavioural conformity and participation in class (Ladd & Dinella, 2009). The results from the current study suggest that people's tendency for positive attitudes towards the institution (i.e., school) and people in positions of authority (i.e., teachers), and tendency to be able to concentrate on work, is adaptive for work success (Ndoja & Malekar, 2020), be this in school or in employment.

The major role of trait engagement in development emphasises the importance of fostering trait engagement in children and adolescents. One way to do this is to offer supports to individual children through social and emotional learning interventions. Interventions for supporting momentary engagement have focused on helping students believe that they can control their attitudes to learning and momentary behaviours in class (Torsney & Symonds, 2019). Targeting the competencies for momentary engagement is important because state engagement at school is documented to build from students' momentary experiences of teachers, peers, and learning (Symonds & Hargreaves, 2016).

Furthermore, according to our findings, protective factors for school engagement included being female, being an ethnic minority, and having higher socioeconomic status in childhood. To enhance engagement, it might be possible to instil some of the cultural and gender norms that facilitate engagement in females and ethnic minority individuals, across all groups in adolescence. Also, provision of supports to children with lower family socioeconomic status may improve their educational experiences. In Ireland where low-income schools receive extra supports from the Government, there are no school income differences in children's feelings about their teachers (D'Urso et al., 2021), suggesting that it is possible to bolster state engagement through educational policy.

Engagement as a Channel for Resources

The major finding of this study was that engagement had a long-term impact on adult education and employment outcomes. One mechanism of this impact could be engagement channelling personal, social, and academic resources to individuals. Self-reported emotional engagement (positive emotions towards school) and behavioural engagement (participating in schoolwork and school activities) have predicted the development of school performance through greater effort and control in studying (Chase et al., 2014). The same phenomenon is observed at college, where having greater emotional and behavioural engagement helps people study effectively (Xie et al., 2019). Therefore, in the current study, the impact of school engagement on adult educational outcomes might be explained by school engagement channelling academic resources to individuals. Also in the current study, school engagement predicted higher socioeconomic status and income in adulthood. Here too, school engagement leading to higher levels of school achievement might be partially responsible for this connection, with higher school achievement in adolescence predicting attainment of more prestigious and well-paid jobs in adulthood (Schoon et al., 2007).

Engagement can also help to channel social support to individuals. In adolescence, having more positive attitudes towards school can build positive teacher-student relationships that in turn strengthen students' behavioural engagement (Longobardi et al., 2021). Also, being more conformist in classrooms can lead to individuals being included in prosocial and pro-school peer groups that encourage those individuals to be on task with their schoolwork (Hargreaves & Pell, 2002). These social resources at school, channelled by engagement, may continue to influence individuals at the school to work transition and in adult employment through longitudinal indirect associations. For example, building a network of engaged peers during adolescence and young adulthood can help individuals do well in higher education and

obtain employment, by encouraging higher educational aspirations and by networking with successful peers and their parents for employment opportunities (Lehman, 2019).

Competencies for Engagement

A further explanation for the longitudinal association between adolescent school engagement and adult socioeconomic status is the transfer of the competencies important for sustaining school engagement (such as self-regulation, goal directed learning, and an optimistic outlook) to sustaining and deepening engagement in the workplace. Having greater social and emotional competencies can help individuals to succeed in the workplace, leading to increased employment opportunities and income (Blázquez et al., 2018). Accordingly, in the current study, school engagement predicted adult work relational and cognitive skills, after controlling for socioeconomic status, gender, cognitive ability, and ethnicity.

Engagement, Education, and Employment in Sociohistorical Context

A final discussion point is the sociohistorical context of the current study, which may have shaped how school engagement impacted adult outcomes. The current study is entrenched in sociocultural context, being set across a 46-year period (1970 – 2016) in Great Britain (England, Scotland, and Wales: three of the four countries of the United Kingdom). In the 1960s, schooling in the United Kingdom was reorganised from a tripartite system of academic grammar schools, and vocational secondary technical and modern schools, into a comprehensive system that focused on providing all children with the academic education necessary for achieving a university entrance qualification (1964 Education Act). During the 1980s when the study participants were in secondary school, the 1964 Education Act had been in force for two decades, potentially influencing adolescents' school engagement through a lack of vocational education. Vocational education and post-school pathways are demonstrated to help improve adolescents' mental health in the short term (Symonds et al., 2016), potentially by better meeting their psychological needs for autonomy, relatedness, and

competence. Accordingly, the academic focus of the comprehensive school system may have led to more variation in school engagement across the system, predicting later life prospects.

Furthermore, during the 1980s, there was an economic recession in the UK, impacting the participants' transitions from school to work. Cross-cohort comparison between the BCS70 participants (born in 1970) and same aged participants in the UK Next Steps cohort (born in 1989-90) revealed that most BCS70 participants were working at age 18-years, whereas more of the Next Steps cohort were in full time employment at age 18-years, demonstrating a rise in the uptake of further and higher education across the period (Duckworth & Schoon, 2012). BCS70 participants were less likely to be in full time education at age 18-years if their parents had low education, whereas this risk was not observed for the Next Steps cohort (Duckworth & Schoon, 2012). Here, the comprehensive school system may have reduced the connection between social class and higher education. In this context where some of the structural barriers to attending university have been softened or removed, school engagement becomes even more important for shaping adult educational and employment outcomes.

Limitations

This study has several limitations which we detail here. First, the data on school engagement, work competencies, and education and employment were collected via self-report and therefore are subject to respondent bias. Only the data on childhood gender and cognitive tests were not administered as self-report. Second, the measure of childhood cognitive ability was created using different tests which were part of British Ability Scales. Because of this, the model identifies how overarching cognitive ability impacts school engagement and adult outcomes. However, it might be of use in future research to examine how distinct types of cognitive abilities (e.g., verbal and mathematical reasoning) impact school engagement and adult outcomes. Third, despite their relatively high factor loadings,

the adult work relational and cognitive skills items were not designed as psychometric measures. A limitation of secondary data analysis is that researchers often need to create variables using measures that are not designed for the specific analysis. The current study would have benefited from longer, psychometric measures of workplace skills. **Fourth, the study did not examine the mechanisms by which adolescent school engagement connected to adult education and employment outcomes. This presents an opportunity for future research to test role of the competencies underpinning engagement (e.g., self-regulation, motivation) as mediators of the connection between engagement and positive outcomes across the life course.** Finally, the results are not directly generalisable to adolescent school engagement in the current era, given the potential sociohistorical influences on individual development across the study period (1970 – 2016). These influences include a rise in social mobility and increasing ethnic diversity in the UK. However, similarities in the process may be visible given that UK school environments have been slow to change since reorganisation in the 1970s (Gray et al., 2011).

Conclusion

In this study we examined the longitudinal connections between adolescent school engagement and adult educational and employment outcomes, in a nationally representative sample of people born in England, Scotland, and Wales. We found that school engagement positively impacted adult educational levels and socioeconomic status and income across middle adulthood, after taking childhood cognitive ability, gender, ethnic minority status, childhood socioeconomic status, **and educational qualifications at 16-years** into account. These findings can be explained by people exhibiting social and emotional competence, and organisational compliance and commitment (Ndoja & Malekar, 2020) in adolescence, leading to success at school and in later educational and occupational endeavours. In line with our theoretical perspective, school engagement can act as a channel to transfer resources (such as

social support and educational qualifications) to individuals who are more engaged in the respective activity. Further research on the development of engagement competencies and on engagement as a channel for resources is recommended to better explain academic and socioeconomic disparities across the life course.

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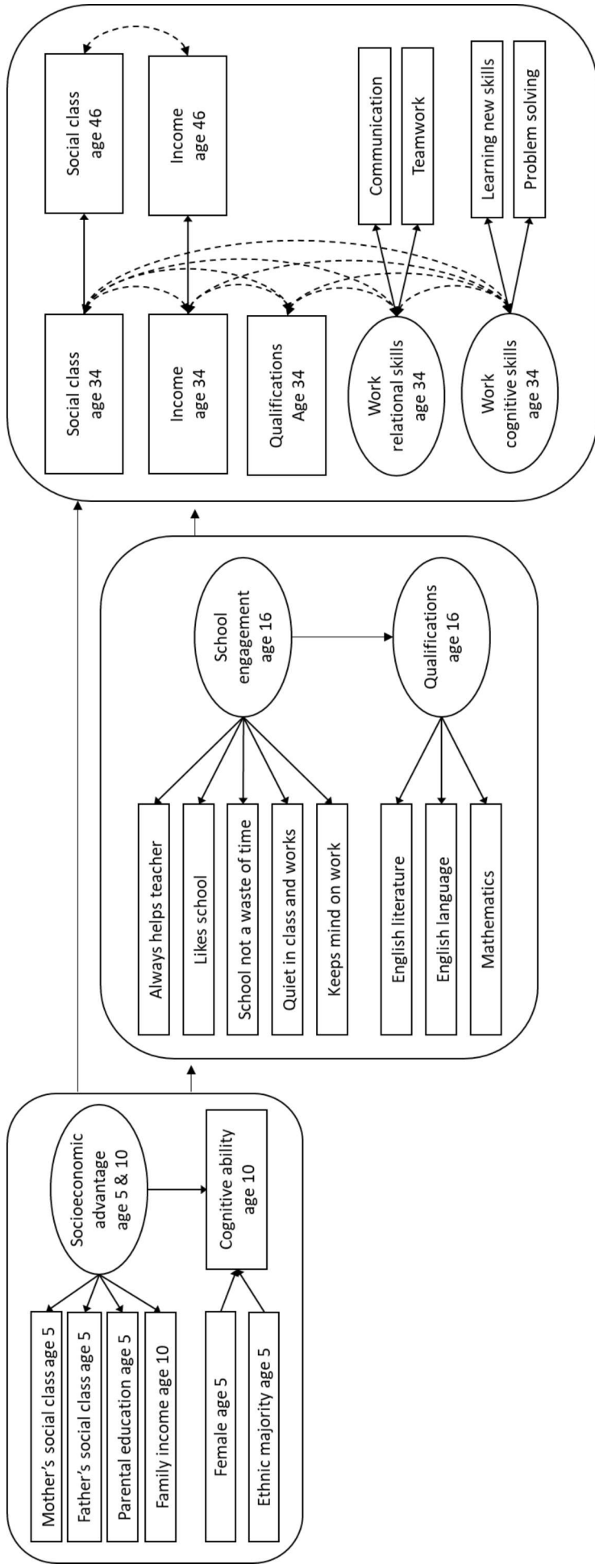
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Figure 1.

Structural model



Notes: All age 16, 34, and 46 variables regressed on all childhood variables. All age 34 and 46 variables regressed on age 16 variables. Pathways omitted for ease of interpretation

Table 1*Study variables correlations and means*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 School engagement age 16	1														
2 Female	.07**	1.00													
3 Ethnic majority	-.03	-.01	1.00												
4 Social class of mother age 5	.10**	.02	.02	1.00											
5 Social class of father age 5	.11**	.01	.08**	.37**	1.00										
6 Parental education	.12**	.00	.07**	.40**	.57**	1.00									
7 Parental income	.08**	.00	.06**	.32**	.45**	.44**	1.00								
8 BAS factor score	.06**	-.06**	.08**	.25**	.31**	.35**	.24**	1.00							
9 Qualification 16-years factor score	.30**	.07**	.03*	.25**	.33**	.39**	.29**	.48**	1.00						
10 Relational work skills age 34	.11**	.09**	.00	.06**	.05**	.06**	.06**	.08**	.11**	1.00					
11 Cognitive work skills age 34	.13**	-.12**	.01	.10**	.10**	.13**	.10**	.23**	.22**	.39**	1.00				
12 Social class of person age 34	.24**	.04*	-.03	.20**	.28**	.33**	.25**	.34**	.44**	.13**	.23**	1.00			
13 Income age 34	.09**	-.21**	.00	.13**	.15**	.16**	.14**	.18**	.26**	.05**	.15**	.24**	1.00		
14 Social class of person age 46	.17**	.01	-.01	.22**	.23**	.26**	.19**	.29**	.38**	.15**	.24**	.48**	.23**	1.00	
15 Income age 46	.11**	-.31**	-.01	.18**	.20**	.22**	.22**	.25**	.25**	.11**	.22**	.32**	.48**	.39**	1.00
Min	1	0	0	1	1	1	1	-4	-2	1	1	2	1	1	1
Max	3	1	1	6	6	5	7	3	1	3	3	8	15	8	15
<i>M</i>	2.19			3.23	3.56	2.39	4.01	0	0	2.72	2.60	5.26	2.52	5.75	3.36
<i>SD</i>	0.42			1.31	1.25	1.45	1.25	1	1	0.41	0.46	1.98	1.96	1.98	2.70
<i>N</i>	5305	13135	12690	8035	10229	12283	10450	9718	6208	7914	7915	3100	5277	6058	4229
% of 1 versus 0		48	96												

Notes: $p < .05$ *, $p < .001$ **, educational qualification age 16 PCA factor score generated for correlational analysis. BAS = British Ability Scales.

Table 2*Confirmatory factor analyses within the structural model*

Latent variables and items	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>
<u>Socioeconomic advantage</u>				
Mother's social class	.54	.01	54.24	.000
Father's social class	.73	.01	104.78	.000
Highest parental education	.77	.01	118.20	.000
Family income	.59	.01	71.51	.000
<u>School engagement</u>				
Always willing to help the teacher	.44	.02	30.31	.000
Do not like school (reversed),	.70	.01	60.59	.000
Feel school is largely a waste of time (reversed)	.64	.01	53.16	.000
Quiet in classroom and get on with work	.42	.02	28.24	.000
Find it difficult to keep mind on work (reversed)	.50	.01	35.96	.000
<u>Educational qualifications age 16</u>				
English literature qualification	.68	.01	81.15	.000
English language qualification	.82	.01	132.87	.000
Mathematics qualification	.79	.01	120.25	.000
<u>Work relational skills</u>				
Good at communicating with others	.70	.01	54.52	.000
Good at teamwork	.66	.01	52.42	.000
<u>Work cognitive skills</u>				
Good at learning new things	.70	.01	64.90	.000
Good at problem solving	.72	.01	65.31	.000

Table 3*School engagement, qualifications age 16-years, and childhood cognitive ability*

Outcome	Predictor	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>
School engagement age 16	Cognitive ability age 10	.02	.02	0.77	.442
	Socioeconomic advantage	.22	.02	10.63	.000
	Female	.20	.03	6.24	.000
	Ethnic majority	-.30	.09	-3.18	.001
Qualifications age 16	School engagement age 16	.33	.02	20.03	.000
	Cognitive ability age 10	.40	.01	28.16	.000
	Socioeconomic advantage	.27	.02	17.43	.000
	Female	.18	.02	7.39	.000
	Ethnic majority	-.12	.07	-1.64	.101
Cognitive ability age 10	Socioeconomic advantage	.45	.01	45.14	.000
	Female	-.15	.02	-7.80	.000
	Ethnic majority	.29	.05	5.58	.000

Table 4*Education and employment outcomes age 34-years*

Outcome	Predictor	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Qualifications age 34	School engagement age 16	.14	.02	7.34	.000
	Qualifications age 16	.44	.02	20.74	.000
	Cognitive ability	.11	.02	7.13	.000
	Socioeconomic advantage	.19	.01	13.01	.000
	Female	.02	.02	0.88	.377
	Ethnic majority	-.32	.06	-5.51	.000
Social class age 34	School engagement age 16	.16	.03	4.86	.000
	Qualifications age 16	.25	.04	6.43	.000
	Cognitive ability age 10	.13	.03	5.07	.000
	Socioeconomic advantage	.20	.02	8.52	.000
	Female	-.01	.03	-0.36	.718
	Ethnic majority	-.31	.09	-3.58	.000
Income age 34	School engagement age 16	.06	.03	2.13	.033
	Qualifications age 16	.17	.03	5.59	.000
	Cognitive ability age 10	.03	.02	1.43	.153
	Socioeconomic advantage	.10	.02	5.26	.000
	Female	-.46	.03	-17.62	.000
	Ethnic majority	-.08	.08	-0.96	.335
Work relational skills age 34	School engagement age 16	.16	.03	5.27	.000
	Qualifications age 16	.05	.04	1.35	.178
	Cognitive ability age 10	.06	.02	2.58	.010
	Socioeconomic advantage	.02	.02	0.67	.500
	Female	.01	.09	0.17	.868
	Ethnic majority	.06	.02	2.58	.010
Work cognitive skills age 34	School engagement age 16	.14	.03	5.06	.000
	Qualifications age 16	.16	.03	4.98	.000
	Cognitive ability age 10	.16	.02	7.10	.000
	Socioeconomic advantage	.02	.02	0.77	.439
	Female	-.03	.08	-0.43	.671
	Ethnic majority	.16	.02	7.10	.000

Table 5*Employment outcomes at age 46-years*

Outcome	Predictor	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Social class age 46	Social class age 34	.34	.02	15.38	.000
	School engagement age 16	.05	.03	1.77	.077
	Qualifications age 16	.19	.03	6.24	.000
	Cognitive ability age 10	.06	.02	2.76	.006
	Socioeconomic advantage	.07	.02	3.73	.000
	Female	-.04	.03	-1.72	.086
	Ethnic majority	-.06	.07	-0.88	.377
Income age 46	Income age 34	.35	.02	22.85	.000
	School engagement age 16	.09	.03	3.48	.000
	Qualifications age 16	.10	.03	3.45	.001
	Cognitive ability age 10	.06	.02	2.97	.003
	Socioeconomic advantage	.13	.02	6.40	.000
	Female	-.50	.03	-18.48	.000
	Ethnic majority	-.16	.08	-1.95	.051