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ABSTRACT

This paper draws on longitudinal birth cohort data for Britain to analyse participation in learning activities by people in their 30s and 40s. People in this age group have received less attention than either young adults or people in retirement. Yet technical change and the need for new skills make it important for them to engage in learning to improve their prospects at work. We investigate participation and non-participation in a range of different types of learning including gaining qualifications, vocational training and learning for interest. Statistical models explore how factors which occur before their 30s influence learning in this phase of the lifecourse. The results show that cumulative advantage is important – those with the highest qualifications in early adulthood were most likely to engage in further learning later on. Participation in learning activities of any kind in young adulthood was also a key antecedent factor predicting higher chances of participating in learning in mid-life.

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Lifecourse; mid-life; adult learning; barriers to learning; cumulative advantage

Introduction

Does adult learning narrow or widens inequality? This is a question which has often vexed researchers. It might promote equality if those who gained few academic qualifications from school are able to catch up later on in life. Or if those who find themselves in poor jobs, or unemployed, are able to use adult learning as a way to improve their situation in the labour market. On the other hand, it could be that those who participate in learning in adulthood are those who have already attained a high level of education via school and university.

This paper focuses on this key question. It does so using rich longitudinal data for Britain meaning that an array of relevant variables can be included in the analyses. It looks specifically at learning by people in their 30s and 40s. This is a distinct phase of the lifecourse in which people are often seeking to develop their careers (hence making the vocational motive for learning of considerable importance) but also combining it with caring for children and other family members (which may limit the time for learning). A range of different types of learning are considered in the paper. We seek to build up a full picture of whether learning engagement widens or narrows social and educational inequalities during this lifecourse stage.

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Literature and hypotheses

Social scientists have long been interested in how inequality changes as people age. Within a cohort, that is compared to others of a similar age, do differences in outcomes such as income, social status, health and education widen or narrow over the lifecourse (O’Rand and Henretta 1999; Pallas 2002). It will be of particular concern if those with more of some outcome early in the lifecourse continue to access more of it through adulthood, with the result that social inequalities widen with age. This is known as the cumulative dis/advantage hypothesis, or sometimes as the ‘Matthew effect’. According to cumulative advantage theory (Dannefer 2003; DiPrete and Eirich 2006) disparities can grow over time via processes of intra-cohort stratification as advantage accumulates for some and disadvantage does so for others. Such processes could sometimes be inherent. For example, certain kinds of poor health at a young age may simply get worse later on in the lifecourse. Or advantage may vary in more complex ways depending on the influence of other factors such as gender, ethnicity, type of employment and so on (O’Rand 2009). There are alternative trajectories to that of cumulative dis/advantage such as the ‘status maintenance’ hypothesis where initial inequalities are carried along through the lifecourse such that within-cohort inequality at a particular point in time will be much the same as in preceding and succeeding periods. Another possibility is the ‘status levelling’ hypothesis which suggests that inequalities narrow in later life. This would probably require substantial intervention from state institutions to offset the inequality brought about by private markets (O’Rand and Henretta 1999; Pallas 2002).

According to Crystal (2006) the mid-life years may be particularly pivotal, having the most direct bearing on later life inequality. He suggests that, while early life influences such as parenting and initial education are important, it is access to resources and the events which occur in mid-life have the most direct relationship with patterns of inequality in later life. The focus of this paper is adult learning in mid-life and the ways in which it may be related to antecedent factors, including prior levels of education. The availability of longitudinal data is essential to accomplish this. For the most part, cross-sectional data is not suitable for this purpose because many such datasets collect only very sparse retrospective information (Blossfeld, Blossfeld, and Blossfeld 2019).

What do earlier studies, based on such data, tell us about the accumulation of education over the lifecourse? One paper, by Elman and O’Rand (1998), looked at people returning to study in their 40s and 50s. They used data from two waves of the National Survey of Families and Households in the United States. Their study focuses on education primarily as retraining to maintain occupational status or to improve occupational mobility as conditions in the labour market change. They found that those with college or advanced degrees were more likely to re-enter school at mid-life than high school graduates. This is supportive of the cumulative dis/advantage hypothesis of education across the lifecourse i.e. the Matthew effect. They focused on a sample of mostly relatively well-educated Americans, with adult education defined in terms of vocational training courses which lead to educational credentials. This is one of the very few international studies focusing on mid-life specifically; most research tends to be based on data for a range of different age groups.

Pallas (2002) analysed adult education participation in the United States based on a cross-sectional survey of adults of all ages from 16 upwards. Respondents were asked

about learning activities which they had undertaken in the preceding 12 months for three types of learning: programmes leading to post-secondary educational credentials; work-related training not leading to qualifications; and personal development courses. Separate logistic regression models were estimated for each of these. The results were consistent with cumulative advantage in the sense that for each of the three types of adult learning those with the least schooling had the lowest probability of participation and those with the most schooling had the highest probability.

McMullin and Kilpi-Jakonen (2014) used data from the British Household Panel Survey for the years 1998–2008. Their sample of about 5000 people covered a range of ages from the early 20s to age 60 for women and 65 for men. They used logistic regression distinguishing participation and non-participation in several types of learning including enrolment on courses leading to qualifications, ‘certified non-formal’ learning which involved courses which lead to a certificate of some kind, and work-related training not leading to a qualification whether sponsored by the employer or undertaken and paid by the respondent themselves. In their models after controlling for gender, age (quadratic), labour force status (employed, unemployed, not in the labour force), age of youngest child, highest education and household income – they found evidence for a Matthew effect. The effect of education level was similar across all four types of adult learning, with the more highly qualified more likely to participate for each type, with slightly stronger effects for vocational training than for certificated learning.

A multi-country study which applied panel regression and logistic regression techniques to several different types of learning is summarised in Kilpi-Jakonen, de Vilhena, and Blossfeld (2015). The analysis covered mainly European countries but also Russia, the United States and Australia. For non-formal learning participation, such as vocational training provided by employers, they report that in nearly all of the 13 countries surveyed there was a pattern of cumulative advantage. For formal adult learning, such as gaining qualifications, the pattern was more mixed but over half the countries displayed evidence of cumulative advantage.

The relationships between economic inequality and the decision to return to education at tertiary level later in life were investigated by Hallsten (2011). Applying hazard models to large-scale population data from Sweden, the key finding was that those people who had experienced some disadvantage either in terms of low earnings or recent experience of unemployment were more likely to enrol in tertiary education. This is consistent with adult learning reducing socio-economic inequality, in other words it is not compatible with the idea of cumulative advantage. In contrast, Kosyakova and Bills (2021) provide an overview of recent literature focusing on cross-national comparative data and the question of whether formal adult education addresses socio-economic inequality. They suggest that, predominantly at least, individuals with advantaged social origins and those in higher positions in the labour market are able to utilise these advantages to gain further access to formal adult education. Nevertheless, the extent to which this is true varies by country. This brief overview of theory and relevant empirical evidence leads to our main hypothesis.

H1. More highly-educated individuals will be more likely to participate in all forms of learning in mid-life. This is the Cumulative Dis/advantage Hypothesis.

Changes in the labour market and increasing competition for well-paid jobs are the background to engage in adult learning in mid-life. People will be motivated by the need to re-

skill, concerns about the obsolescence of existing skills in the face of technical change, and the desire to upgrade, gain promotion and increase earnings. Research has shown that improving career prospects were among the prime motivations for gaining new educational qualifications in adulthood (Jenkins *et al.* 2003; Chesters, Cuervo, and Fu 2020). While the wish to improve their career applies to all, the likelihood of adults participating in learning could well be affected by current position in the labour market. Those in precarious or disadvantaged positions, such as the unemployed or those in poorly-paid part-time work may have stronger incentives to engage in learning than those who already have secure, full-time jobs (Stenberg 2011). Full-time employees may also have less time to participate in adult learning. But those in precarious work or unemployed may have little or no access to employer-provided training, while full-time workers and especially those in secure, well-paid jobs are more likely to be trained by their employers. It seems plausible, then, that those in precarious positions in the labour market might be more likely to do some forms of adult learning, such as studying towards qualifications so as to boost their position in the labour force but will have less access to vocational training provided by employers. Hence, we have Hypothesis 2.

H2. Those in precarious positions in the labour market at 33, such as the unemployed and those working part-time will be more likely to participate in gaining qualifications and in returning full-time to education in mid-life. But they will be less likely to participate in vocational training in the mid-life phase of the lifecourse. This is sometimes known as ‘partial equalisation’. (Kilpi-Jakonen *et al.* 2014)

There may also be differences in participation by gender. Women are more likely to have interrupted careers, as they take time out of the labour force to bear and raise children, and they will also be more likely to be working part-time for the same reason. Discrimination by employers, and the clustering of women in certain occupations which provide less access to training, will mean fewer vocational training opportunities for women (Kilpi-Jakonen *et al.* 2014). On the other hand, women could be more likely to compensate for gaps in their career by being pro-active in undertaking courses themselves and gaining new qualifications in adulthood (Jenkins 2006). We can therefore generate an hypothesis about differences in participation by gender.

H3. Women will be more likely to participate in gaining qualifications and in returning full-time to education in mid-life. But they will be less likely to participate in vocational training in mid-life. This can be termed the Gendered Participation Hypothesis.

Over the course of their lives, individuals will have an educational ‘career’ or trajectory which involves participation or non-participation in various forms of learning activity, the acquisition of qualifications and skills (Blossfeld and von Maurice 2011; Pallas 2002). Life course researchers argue strongly that engagement and achievements at earlier educational stages often have consequences for educational participation and outcomes later on. An implication of this is the notion that ‘learning leads to learning’ (Jenkins *et al.* 2003). For example, people who return to learning in their 20s may then be enthused to do further study in their 30s and 40s. This leads to our final hypothesis.

H4. It is anticipated that those who participate in any form of learning in young adulthood will be more likely to participate in forms of learning in mid-life. This is the Learning leads to learning Hypothesis.

Pulling together different strands from a review of the literature and drawing especially on the work of Blossfeld and von Maurice (2011); Elman and O’Rand (1998, 2004); Kilpi-Jakonen et al. (2014) and Pallas (2002, 2004), some hypotheses about participation in learning in mid-life have been generated. In the remainder of this paper, a longitudinal data source which contains detailed information on learning in mid-life will be used to test these various hypotheses.

Data

Data are from the 1958 British birth cohort, also known as the National Child Development Study (NCDS). The NCDS began as a survey of all the babies born in a particular week in Britain in 1958. Follow-up surveys were conducted several times in childhood and then in adulthood when cohort members were aged 23, 33, 42 and 50.

The main focus of this research is on mid-life learning, defined as engagement in structured learning activities between the ages of 33 and 50. Four types of learning could be identified in the NCDS for this age group: participation in vocational training (hence non-formal vocationally oriented learning); participation in courses for leisure or interest (the questions in the survey do not specify whether this is formal or informal, just that it is non-vocational); gaining a lower-level qualification; gaining an intermediate or higher-level qualification. Gaining qualifications means certified, formal learning. By lower-level is meant equivalent to NVQ level 2 or below; intermediate/higher qualifications are therefore at NVQ level 3 or above. For detailed description of the NVQ qualification levels (see Makepeace et al. 2003).

The number of cases for which information was available on all the types of learning between ages 33 and 50 was 8594, or about 88 per cent of all the cases present in the age 50 wave of the NCDS. There are five outcomes of interest: whether or not an individual participated in each of the four forms of learning activity identified, and a further variable measuring whether or not they participated in any of these types of learning (i.e. a learners vs non-learners variable). These five outcomes were related to a set of explanatory variables.

Explanatory variables

Explanatory variables were selected on the basis of prior literature in the field of adult education. There is a rich set of variables within the NCDS upon which to draw. These include family background variables, highest qualification by age 33, engagement in various forms of learning after school, work situation at age 33 and family situation at age 33. Among the key variables are:-

Sex. This variable was coded zero for males and one for females.

Engagement with learning in early adulthood.

To measure courses taken in young adulthood three binary variables were utilised:

Any courses leading to qualifications between the ages of 23 and 33.

Any work-related courses lasting three days or more between ages 23 and 33.

Any courses undertaken for interest between the ages of 23 and 33.

Highest qualification at age 33

Highest level of qualification achieved by cohort members at the age of 33 was coded to six levels, where each level is defined in terms of equivalency with National Vocational Qualifications (NVQs) (Makepeace et al. 2003).¹

0 = no qualifications

1 = NVQ level 1 or equivalent, low-grade GCSEs or O levels

2 = qualifications at O level or GCSE A-C grade, NVQ level 2 or equivalent

3 = A level(s), NVQ level 3 or equivalent

4 = degree, NVQ level 4 or equivalent

5 = higher degree, NVQ level 5 or equivalent

Employment status at 33

Categories are: working full-time, part-time, or unemployed/out of the labour force.

Controls were also included for social class of origin, family situation at age 33 (whether had a partner, number of children), whether had a disability or long-term illness, and type of work (occupational group, whether employed in public sector or working for a large organisation).

Method

We use data from the various adult waves of NCDS up to the age of 50 in 2008. There is a unique identifier for each individual which makes it straightforward to combine data from different waves. Regression analysis is a very widely used method for relating some outcome of interest to a set of explanatory variables which may influence that outcome. The appropriate form of regression analysis will depend on the nature of the outcome variables. Here all the outcome variables are binary (someone either engaged in certain learning activity or else did not do so) and so the standard approach would be binary logistic regression. This assumes that the response is binary and follows a Bernoulli distribution. The response is related to a linear function of the explanatory variables (Collett 2003; Hilbe 2016).

Missing data on certain items is a common problem in large-scale survey analysis. Since the explanatory variables used in this study were from multiple waves of a birth cohort survey, missingness was an issue that needed to be addressed. Multiple imputations were therefore used. Here the process of filling in missing values is carried out several times to create a multiple set of completed datasets, i.e. ones with no missing values. These completed datasets are then used for the analysis of the research question of interest with results from each dataset combined in an appropriate way. Some auxiliary variables – additional variables for improving the imputation but not included in the regression models of substantive interest – were used from several waves of the survey. Some 50 imputed datasets were created and all the analyses were run on each dataset separately and then combined.

Results

Descriptive statistics

We begin with some tabulations and cross-tabulations before proceeding to more formal statistical modelling. Table 1 shows the proportions of respondents who engaged in each

of the four different types of learning between the ages of 33 and 50. This is a substantial span of time and it is no great surprise that these proportions are quite high. Just over half, 52%, had participated in some vocational training, and 45% had done at least one course for leisure or interest. Some 43% had obtained a lower level qualification while almost a quarter, 23.8% had obtained intermediate or higher level qualifications. It is also apparent from [Table 1](#) that the proportion of women who had done some work-related training between the ages of 33 and 50 was lower than that for men but women were more likely to have participated in the other forms of learning, including gaining qualifications.

There was a steep gradient in the likelihood of participating in most of the various forms of learning between 33 and 50 by the highest level of qualification attained by age 33. [Table 2](#) shows that less than 30% of those with no qualifications by age 33 did any work-related training between then and age 50 whereas two-thirds of those who had attained a Level 5 qualification by age 33 did some work-related training between the ages of 33 and 50. More than one in three of those at Level 4 or 5 by age 33 gained further intermediate or higher qualifications by age 50 compared to a fifth or less for those at Level 2 or below at age 33. Only for lower-level qualifications was the gradient by the highest qualification level at 33 not particularly evident.

From [Table 3](#) we observe that those who had done a course leading to a qualification between the ages of 23 and 32 were much more likely to also participate in any form of learning between the ages of 33 and 50. The differential was as large as 20 percentage points (37% to 17%) for gaining intermediate or higher level qualifications between the ages of 33 and 50, for instance. These were the key points which emerged from the descriptive statistics. Further details, with cross-tabulations for all explanatory variables, are shown in [Appendix A1](#).

Regression results

[Table 4](#) reports the odds ratios from binary logistic regression modelling of the likelihood of undertaking different types of learning in mid-life. Reading from the left, the first four columns show binary logistic regression results for each of the four different types of learning (vocational training, courses for interest or leisure, gaining low-level qualifications, gaining intermediate or higher level qualifications) respectively, while the last column on the right is the model for participation in any of these types of learning in mid-life compared to non-participation. If the odds ratio is greater than one that implies that the characteristic is associated with an increased probability of undertaking learning and less than one means a reduced probability. The results reported in [Table 4](#)

Table 1. Participation in different forms of learning, ages 33–50, by sex.

	M	F	All
	%	%	%
Work-related training	56	47	52
Courses for leisure/interest	40	49	45
Lower qualifications	39	46	43
Intermediate/higher qualifications	19	28	24
Total	4151	4443	8594

Table 2. Participation in learning, ages 33–50, by highest qualification level at age 33.

	None %	L1 %	L2 %	L3 %	L4 %	L5 %	Total %
Work-related training	29	40	49	57	63	67	52
Courses for leisure/interest	24	32	41	51	56	65	45
Lower qualifications	30	42	46	47	43	39	43
Intermediate/higher qualifications	7	14	20	26	37	36	24
Total	737	1184	2812	1397	1516	948	8594

are for the dataset on which multiple imputation (MI) was conducted so as to address missingness on certain covariates; the results for the complete case (CC) data are in Appendix A2. The MI results and the CC results were, in fact, very similar indeed.

Hypothesis 1, which concerns cumulative advantage, suggests that the chances of participation in mid-life learning will be higher for more highly-educated individuals. In Table 4 the highest qualification variable at age 33 is broken down into five levels relative to a base category of no qualifications at age 33. It is readily apparent that having qualifications of any kind increased the odds participating in mid-life learning compared to those with no qualifications at all and this applied to all types of mid-life learning. For vocational training there was a clear hierarchical pattern too – the odds of participating in vocational training were higher for people at higher levels of qualification – for example the odds are higher for those with Level 2 qualifications than those with Level 1, higher for those with Level 3 than Level 2, and so on. The pattern is similar for courses for leisure/interest (although the odds for those at Level 4 by age 33 was marginally lower than those at Level 3 here), and for gaining intermediate or higher level qualifications – where the odds increased up to Level 4 at age 33, but were slightly lower for those who had already reached Level 5 by age 33. The pattern of odds increasing by level of highest qualification at age 33 also applied in the last column which shows the odds of participating in any type of learning in mid-life. For obtaining lower-level qualifications in mid-life the odds were greatest for those with Level 2 or Level 3 as their highest qualification level at age 33. But, on the whole, the pattern of learning participation is very much a hierarchical one – those with the highest qualifications at age 33 being more likely to participate in mid-life – in most specific forms of learning and overall, any participation versus none.

Table 3. Participation in mid-life learning, by participation in young adulthood (ages 23–32).

	Work-related training	Courses for leisure or interest	Lower qualifications	Intermediate or higher qualifications	
Course leading to qualifications, aged 23–32:					
	%	%	%	%	N
No	47	40	40	17	5155
Yes	62	56	51	37	2744
All	52	45	44	24	7899
Course for leisure or interest, aged 23–32:					
No	49	36	41	20	5080
Yes	58	62	49	32	2813
All	52	46	44	24	7893
Vocational training course, aged 23–32:					
No	42	41	42	21	4876
Yes	69	53	46	30	2975
All	52	45	44	24	7851

Table 4. Logistic regression models for mid-life learning, multiple imputation dataset.

	Results reported as odds ratios				
	(1)	(2)	(3)	(4)	(5)
	Vocational training	Courses for interest or leisure	Low-level qualifications	Intermediate or high qualifications	Any type of learning
<i>Highest qualification at 33 (base is none)</i>					
Level 1	1.382** (3.06)	1.228 (1.86)	1.575*** (4.45)	1.840*** (3.65)	1.552*** (4.27)
Level 2	1.729*** (5.62)	1.617*** (4.76)	1.810*** (6.29)	2.550*** (6.05)	2.324*** (8.71)
Level 3	2.053*** (6.62)	2.166*** (6.93)	1.844*** (5.79)	3.656*** (7.94)	2.994*** (9.16)
Level 4	2.146*** (6.64)	2.098*** (6.34)	1.456*** (3.37)	4.526*** (9.08)	3.154*** (8.59)
Level 5	2.199*** (6.10)	2.659*** (7.51)	1.143 (1.07)	3.691*** (7.39)	3.197*** (7.00)
<i>Economic status at 33 (base is full-time work)</i>					
Part-time work	0.782** (−3.14)	1.139 (1.67)	1.152 (1.89)	1.251* (2.53)	0.977 (−0.22)
Unemployed/Out of Labour Force	0.654*** (−5.68)	1.079 (1.02)	1.056 (0.77)	1.315** (3.11)	0.897 (−1.21)
Female	0.914 (−1.46)	1.408*** (5.64)	1.245*** (3.74)	1.605*** (6.77)	1.322*** (3.50)
Has partner (at age 33)	1.017 (0.24)	0.998 (−0.03)	0.934 (−1.01)	0.985 (−0.19)	1.002 (0.02)
<i>Children at 33 (base is none)</i>					
One	1.167* (2.01)	0.923 (−1.04)	1.171* (2.13)	0.971 (−0.33)	1.108 (1.02)
Two	1.297*** (3.68)	0.953 (−0.71)	1.212** (2.88)	1.090 (1.08)	1.202* (1.98)
Three or more	1.487*** (4.57)	0.912 (−1.08)	1.240** (2.59)	1.336** (2.90)	1.259* (2.13)
Courses leading to qualifications, between ages 23 and 32	1.349*** (5.52)	1.427*** (6.61)	1.740*** (10.45)	2.287*** (13.92)	2.159*** (9.54)
Work-related training courses, between ages 23 and 32	2.421*** (16.52)	1.312*** (5.10)	1.279*** (4.63)	1.375*** (5.27)	2.481*** (11.59)
Any courses for interest, between ages 23 and 32	1.226*** (3.86)	2.186*** (15.17)	1.357*** (6.08)	1.333*** (4.86)	1.976*** (8.99)
Female	0.914 (−1.46)	1.408*** (5.64)	1.245*** (3.74)	1.605*** (6.77)	1.322*** (3.50)
<i>Social class at birth (base is professional)</i>					
Managerial	1.215 (1.62)	1.038 (0.31)	0.982 (−0.15)	0.861 (−1.15)	1.139 (0.79)
Skilled non-manual	1.341* (2.31)	1.002 (0.01)	0.983 (−0.14)	1.020 (0.14)	1.397 (1.92)
Skilled manual	1.517*** (3.73)	0.887 (−1.08)	0.996 (−0.04)	1.092 (0.73)	1.365* (2.04)
Semi-skilled	1.384* (2.57)	0.807 (−1.71)	1.046 (0.37)	1.302 (1.90)	1.244 (1.30)
Unskilled	1.517*** (3.05)	0.900 (−0.78)	1.115 (0.83)	1.356* (2.01)	1.284 (1.41)
Disabled/long-term illness (at 33)	0.981 (−0.32)	1.077 (1.27)	1.167** (2.75)	0.961 (−0.58)	1.097 (1.23)
<i>Occupational class at 33 (base is professional/managerial)</i>					
Skilled non-manual	0.957 (−0.64)	0.902 (−1.52)	1.277*** (3.70)	0.842* (−2.22)	1.043 (0.45)
Skilled manual	0.857* (−2.09)	0.792** (−3.14)	1.309*** (3.73)	0.801* (−2.45)	1.021 (0.23)

(Continued)

Table 4. Continued.

	Results reported as odds ratios				
	(1)	(2)	(3)	(4)	(5)
	Vocational training	Courses for interest or leisure	Low-level qualifications	Intermediate or high qualifications	Any type of learning
Semi/unskilled	0.891 (-1.46)	0.803** (-2.73)	1.352*** (3.87)	0.866 (-1.50)	1.052 (0.51)
Working in public sector at 33	1.643*** (7.88)	1.083 (1.29)	1.019 (0.32)	1.394*** (4.91)	1.587*** (4.97)
Working in large organisation at 33	1.520*** (5.38)	0.951 (-0.71)	1.033 (0.46)	1.127 (1.49)	1.268* (2.24)
Observations	8594	8594	8594	8594	8594
Imputed datasets	50	50	50	50	50

Note: Exponentiated coefficients; *t* statistics in parentheses.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

As for the Partial Equalization Hypothesis (H2), it can be observed that if someone was working part-time at age 33, or not in paid work at all at that age, were both associated with substantial reductions in the likelihood of participating in vocational training in mid-life, compared to those working full-time. However, those who were unemployed or out of the labour force at 33 were more likely to obtain intermediate or higher level qualifications in mid-life. Indeed the odds of so doing were nearly one-third higher than the reference category, full-time workers, after allowing for the other variables in the model.

Turning to Hypothesis 3, gendered participation, the odds of participating in some form of learning in mid-life were almost a third higher for females than males. As for the specific types of learning in mid-life, women were more likely than men to participate in courses for interest/leisure, they were also more likely to obtain qualifications – at both low and especially at intermediate/high levels – while being somewhat less likely than men to participate in vocational training (although this difference on vocational training was not statistically significant). There was little evidence that, after controlling for other factors in our models, social class of origin had any direct impact on the probability of being a learner in mid-life. Being disabled or having a long-standing illness at 33 was mostly not statistically significant in these regression models. Nor was the presence of a partner in the household found to be significantly associated with the outcome variables in this range of models. Those with children at age 33 were somewhat more likely to be a learner in mid-life, particularly if they had several children. The explanation here is probably that those who had already had children by their twenties or early thirties were then able to participate more in learning as they entered mid-life and their children became older and more independent.

And we see that those who had participated in learning of whatever type in young adulthood (Hypothesis 4), between the ages of 23 and 32, were also more likely to be participants in learning in mid-life. Each of the three types of learning in young adulthood was associated, even after controlling for other relevant factors, with a doubling of the odds of participating in some form of learning in mid-life (column 5) and were all also strongly associated with increased odds for the four specific types of learning in mid-life identified in columns (1) to (4) of Table 4.

Discussion

In this paper, we have analysed the factors which explain participation and non-participation in learning during mid-life. The first hypothesis considered was that of cumulative advantage. There was strong evidence in support of this. Those with the highest qualifications at age 33 were more likely to participate in mid-life, both overall and in most specific forms of learning. This is consistent with previous evidence (Pallas 2002, 2004; Kilpi-Jakonen *et al.* 2014, 2015). On the whole, research which has investigated the topic has tended to more often confirm this hypothesis than contradict it (Kosyakova and Bills 2021). This paper has added a specific focus on the mid-life phase of the life-course while other research has often used data across a range of ages.

NCDS data were first collected at the time of the birth of the cohort in 1958 and there have been many follow-up waves of data collection since then. A picture can therefore be built up of the development of their lives from childhood into young adulthood and then through to mid-life. The richness of the 1958 birth cohort data has encouraged numerous researchers to analyse it, including many papers on educational topics. This means that how cumulative processes have played out over the course of the lives of cohort members can be explored.

Key publications include Kerckhoff's (1993) seminal work which exploited the longitudinal nature of the data to measure the position of respondents in the social hierarchy at multiple points in time from childhood to early adulthood. A hierarchy could be constructed – since in primary schools there may be high or low ability groupings, there are certain elite schools, or lower-status comprehensive or secondary modern schools and more prestigious universities and so on. Kerckhoff therefore allocated people to a position in the social structure based on percentile rank within the distribution. He followed the trajectories of pupils from infant school to junior school, to secondary school, to post-secondary education and training and into the workforce. As they move through these educational careers trajectories might be deflected either upwards or downwards. It was found that those who were in favourable positions at a certain stage tended to move upwards over time, while those starting in a less favourable position tended to move downwards as they progressed through childhood and into early adulthood.

Bynner (2001) then used longitudinal birth cohort data from the NCDS to look at the next stages in the lifecourse: post-school educational progression, between the ages of 17 and 23, and then educational participation in young adulthood up to the age of 33. Participation covered vocational training courses, gaining qualifications and non-vocational courses. Progression was defined in terms of gaining qualifications at a higher level than previously held. For cohort members aged between 17 and 23, reading and maths scores on tests taken at age 11, and staying at school beyond 18 were predictors of participation, as were high levels of parental education and parental interest in the cohort member's education. Indicators of poor family circumstances at age 11, such as living in overcrowded accommodation, reduced the likelihood of participation. Women were less likely to participate than men in this age range. Predictors of progression between 17 and 23 were similar to those for participation.

In young adulthood, that is between the ages of 24 and 33, highest qualification level achieved by 23 was by far the most important predictor of progression and participation. Parental education and parental social class were no longer significant, their impact

presumably absorbed by highest qualification level at 23. Maths and reading test scores at age 11, and age left education, continued to be significant even in the presence of the highest qualification variable. Bynner summarised his findings as showing that

‘the more successful people were at school the more likely they were to be participating and progressing further during adulthood ... the analysis of NCDS data provides convincing evidence that those who start with the best prospects, and achieve most from formal education while at school, go on gaining more of it and more from it throughout their lives. (Bynner 2001, 92)

In this paper, we have extended the analysis through to the mid-life phase and shown that the processes of cumulative advantage which were apparent in childhood and young adulthood were continuing to operate during this mid-life stage of the lifecourse, from age 33 to age 50.

While cumulative advantage is important, this does not mean that only those with higher qualifications participate in learning including in mid-life. Some who have few qualifications by age 33 do manage to gain new qualifications or participate in other forms of learning in mid-life. Sabates, Feinstein, and Skaliotis (2007) report on the acquisition of lower academic and vocational qualifications amongst people in their 30s and early 40s who left school without credentials; other researchers have demonstrated that quite sizeable numbers of people obtain degree-level qualifications for the first time in mid-life too (Jenkins 2018).

Hypotheses were therefore developed to provide insight into the other factors associated with participation and non-participation decisions in mid-life. Some support was found for *H2, the partial equalisation hypothesis*. This hypothesis suggests that those in precarious positions in the labour market at 33, such as the unemployed or people working part-time would be more likely to participate some forms of learning such as gaining qualifications and returning full-time to education in mid-life, but they would be less likely to participate in vocational training. Indeed, it was found that working part-time or being unemployed at the age of 33, were both associated with substantial reductions in the likelihood of participating in vocational training in mid-life. But these groups were more likely to obtain intermediate or higher level qualifications in mid-life. Previous research on partial equalisation has been mixed – some studies have found evidence for it; others contradict it. Results have depended on the country analysed and the data source used (see Kilpi-Jakonen *et al.* 2014, 2015 for overviews of previous work). As for *H3 (gendered participation)* it was confirmed that females were more likely than males to participate in courses for interest/leisure and they were also more likely to obtain qualifications at both low and especially at intermediate/high levels. This is broadly consistent with much previous research. There was strong support for *H4*, that learning may lead to further learning. It was found that those who had participated in learning in young adulthood, between the ages of 23 and 32, were also then more likely to be participants in learning activities in mid-life. This may provide a useful insight into how learning in mid-life could be encouraged.

Conclusion

Whether adult education offers people who did not do well at school or college a second chance to catch up with education and training later on, or whether it in fact widens

disparities due to the presence of a ‘Mathew effect’ is one of the key questions in this field (Kilpi-Jakonen, de Vilhena, and Blossfeld 2015; Kosyakova and Bills 2021). The results in this paper contribute to the topic, focusing specifically on people in their 30s and 40s in Britain. The analyses draw on rich, longitudinal data which have been collected over the course of their lives for a cohort born in 1958. It was found that processes of cumulative advantage continued to play out during this phase of the lifecourse. Those already well-qualified by age 33 were more likely to participate in various types of further learning between the ages of 33 and 50. Support for the idea of adult learning as a second chance was more limited but those in more precarious positions in the labour market at age 33 – the unemployed and people working part-time – were more likely to obtain intermediate or higher level qualifications in mid-life.

A number of limitations to the results need to be acknowledged. While the analyses include controls for gender and for numbers of children further research could usefully explore whether the impact of children has differential effects on the propensity to engage in learning for women compared to men. People dropping out (attrition) is always a worry for longitudinal studies. Research on the NCDS has suggested that while there is dropout from the study, and indeed that it may be systematic to some extent this is probably not sufficient to cause substantial bias to regression estimates (Plewis and Hawkes 2006). Nevertheless, attrition from the sample by age 50 does need to be borne in mind as a potential limitation of the analyses presented here. In addition, the analyses apply to one country, Britain and do not necessarily generalise beyond that context. Moreover, the cohort studied here was 50 years old in 2008 – this means that the context was the relatively affluent years before the 2008/2009 financial crash when provision of adult education courses was more generous than it has been since in the post-2009 austerity period. Nevertheless, this study contributes new information on learning in the mid-life phase of the lifecourse. And it shows the usefulness of longitudinal analyses based on a good data source for research on the role of learning at different lifecourse stages.

Note

1. Those at NVQ level 5 will have a higher degree (such as a Masters or a doctorate) or some high-level vocational equivalent – for example a postgraduate teaching or nursing qualification. NVQ level 4 implies a university degree or similar vocational qualification. Those at level 3 would have acquired A levels (an academic qualification usually obtained at the age of 18 at a school or college) or a similar vocational qualification. NVQ2 equates to the kind of qualifications often obtained by the age of 16, while NVQ1 are low-level qualifications.

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Appendices

Appendix A1: Descriptive statistics

	Percentage doing learning in mid-life (ages 33–50)				N
	Work-related training	Courses for leisure or interest	Lower qualifications	Intermediate or higher qualifications	
By social class or origin:	%	%	%	%	
Professional	52	57	42	31	432
Managerial	53	55	42	25	1236
Skilled non-manual	54	50	42	25	883
Skilled manual	52	43	43	23	4131
Semi-skilled manual	47	38	43	23	1072
Unskilled	47	38	44	22	691
All	51	45	43	24	8445
By highest qualification level at 33:					
None	29	24	30	7	737
L1	40	32	42	14	1184
L2	49	41	46	20	2812
L3	57	51	47	26	1397
L4	63	56	43	37	1516
L5	67	65	39	36	948
All	52	45	43	24	8594
By sex:					
M	56	40	39	19	4151
F	47	49	46	28	4443
All	52	45	43	24	8594
Course leading to qualifications, aged 23–32:					
No	47	40	40	17	5155
Yes	62	56	51	37	2744
All	52	45	44	24	7899

(Continued)

Continued.

	Percentage doing learning in mid-life (ages 33–50)				
	Work-related training	Courses for leisure or interest	Lower qualifications	Intermediate or higher qualifications	
Course for leisure or interest, aged 23–32:					
No	49	36	41	20	5080
Yes	58	62	49	32	2813
All	52	46	44	24	7893
Vocational training course, aged 23–32:					
No	42	41	42	21	4876
Yes	69	53	46	30	2975
All	52	45	44	24	7851
Long-term illness/disability at 33:					
No	52	45	42	24	6915
Yes	51	46	46	23	1679
All	52	45	43	24	8594
Partnered at 33:					
No	50	46	43	24	1500
Yes	53	45	44	24	6418
All	52	46	44	24	7918
Any children at 33?					
No	54	49	41	25	2422
Yes	51	44	45	24	5496
All	52	46	44	24	7918
Number of children at 33:					
None	54	49	41	25	2438
One	52	45	44	23	1466
Two	52	45	45	24	2844
Three or more	49	40	44	24	1168
All	52	46	44	24	7916
Occupational class at 33:					
Prof/managerial	62	55	40	31	3130
Skilled non manual	50	47	48	24	2045
Skilled manual	48	34	42	16	1642
Semi/unskilled manual	42	35	44	18	1479
All	52	45	43	24	8296
Econ activity at 33:					
Full-time work	57	45	41	23	5467
Part-time work	47	48	48	28	1471
Unemployed/out of labour force	36	44	44	24	1645
All	52	45	43	24	8583
Working in public sector at 33:					
No	49	43	44	22	5266
Yes	69	52	45	34	1874
All	54	45	44	25	7140
Working for large organisation at 33:					
No	53	45	45	24	5374
Yes	71	48	44	30	1140
All	56	46	45	25	6514

Appendix A2. Further regression results

Logistic regression models for mid-life learning, complete case data					
Results reported as odds ratios					
	(1)	(2)	(3)	(4)	(5)
	Vocational training	Courses for interest or leisure	Low-level qualifications	Intermediate or high qualifications	Any type of learning
<i>Highest qualification at 33 (base is none)</i>					
Level 1	1.247 (1.72)	1.318* (1.97)	1.486** (3.14)	1.829** (2.85)	1.484** (3.02)
Level 2	1.639*** (4.12)	1.666*** (3.89)	1.746*** (4.71)	2.624*** (4.84)	2.273*** (6.59)
Level 3	1.981*** (5.13)	2.353*** (6.01)	1.787*** (4.44)	3.868*** (6.51)	3.336*** (7.74)
Level 4	1.903*** (4.63)	2.264*** (5.56)	1.402* (2.48)	4.936*** (7.59)	3.114*** (6.77)
Level 5	2.024*** (4.52)	2.605*** (5.91)	1.071 (0.45)	4.016*** (6.27)	2.473*** (4.47)
<i>Economic status at 33 (base is full-time work)</i>					
Part-time work	0.681*** (-4.29)	1.072 (0.77)	1.130 (1.41)	1.131 (1.21)	0.820 (-1.64)
Unemployed/Out of Labour Force	0.578*** (-6.25)	1.044 (0.48)	1.092 (1.04)	1.312** (2.66)	0.831 (-1.65)
Female	0.863* (-2.06)	1.447*** (5.20)	1.252** (3.29)	1.592*** (5.77)	1.275* (2.46)
Has partner (at age 33)	1.050 (0.63)	1.002 (0.02)	0.903 (-1.36)	0.999 (-0.01)	1.029 (0.27)
<i>Children at 33 (base is none)</i>					
One	1.192* (2.04)	1.019 (0.22)	1.129 (1.48)	0.999 (-0.01)	1.191 (1.50)
Two	1.325*** (3.54)	1.056 (0.69)	1.166* (2.02)	1.144 (1.50)	1.297* (2.41)
Three or more	1.549*** (4.35)	0.962 (-0.39)	1.242* (2.26)	1.404** (2.98)	1.482** (2.98)
Courses leading to qualifications, between ages 23 and 32	1.239*** (3.47)	1.391*** (5.44)	1.735*** (9.28)	2.185*** (11.70)	2.038*** (7.56)
Work-related training courses, between ages 23 and 32	2.207*** (13.25)	1.313*** (4.59)	1.162** (2.60)	1.367*** (4.67)	2.283*** (9.22)
Any courses for interest, between ages 23 and 32	1.246*** (3.69)	2.198*** (13.66)	1.394*** (5.86)	1.383*** (4.96)	2.195*** (8.70)
<i>Social class at birth (base is professional)</i>					
Managerial	1.181 (1.20)	1.061 (0.43)	1.073 (0.53)	0.885 (-0.82)	1.277 (1.22)
Skilled non-manual	1.249 (1.53)	0.922 (-0.56)	1.045 (0.31)	1.039 (0.25)	1.362 (1.48)
Skilled manual	1.400*** (2.62)	0.880 (-1.01)	1.029 (0.24)	1.155 (1.06)	1.402 (1.84)
Semi-skilled	1.257 (1.57)	0.839 (-1.21)	1.161 (1.06)	1.381* (2.03)	1.450 (1.83)
Unskilled	1.533*** (2.69)	0.828 (-1.19)	1.315 (1.80)	1.404 (1.94)	1.254 (1.05)
Disabled/long term illness (at 33)	0.997 (-0.04)	1.116 (1.64)	1.124 (1.82)	0.999 (-0.02)	1.144 (1.48)
<i>Occupational class at 33 (base is professional/managerial)</i>					
Skilled non-manual	0.924 (-1.00)	0.934 (-0.88)	1.172* (2.10)	0.847 (-1.90)	0.901 (-0.93)

(Continued)

Continued.

	Logistic regression models for mid-life learning, complete case data				
	Results reported as odds ratios				
	(1)	(2)	(3)	(4)	(5)
	Vocational training	Courses for interest or leisure	Low-level qualifications	Intermediate or high qualifications	Any type of learning
Skilled manual	0.958 (-0.48)	0.772** (-2.90)	1.349*** (3.50)	0.839 (-1.65)	0.954 (-0.40)
Semi/unskilled	0.897 (-1.17)	0.794* (-2.44)	1.235* (2.32)	0.905 (-0.90)	0.922 (-0.67)
Working in public sector at 33	1.446*** (5.46)	1.092 (1.33)	0.974 (-0.42)	1.371*** (4.35)	1.441*** (3.68)
Working in large organisation at 33	1.424*** (4.54)	0.928 (-1.01)	1.033 (0.45)	1.111 (1.27)	1.229 (1.82)
Observations	6270	6270	6270	6270	6270
McFadden's Pseudo-R ²	0.088	0.085	0.028	0.096	0.113

Note: Exponentiated coefficients; *t* statistics in parentheses.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.