



National Research and Development Centre
for adult literacy and numeracy

DOES NUMERACY MATTER MORE? SAMANTHA PARSONS AND JOHN BYNNER



Published by the National Research and Development Centre for Adult Literacy and Numeracy

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ISBN 1 90 5188 09 9

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NRDC is a consortium of partners led by the Institute of Education, University of London (see back cover for a list of members) and is part of the Bedford Group for Lifecourse and Statistical Studies at the IoE.

www.ioe.ac.uk/bedfordgroup

Design: Chapman Design Limited

Print: Bradell

Cover photos: Photodisc/Medio Images

Peer review

Greg Brooks, University of Sheffield;
Augustin de Coulon, NRDC and
John Vorhaus, NRDC

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Summary

Most people recognise that a low level of literacy skill can make it difficult to function effectively in adult life, but it is often assumed that numeracy (i.e. being able to deal competently with numbers, tables and graphs) is less important than literacy. This study was designed to test whether this is in fact the case.

The study draws on data from two major longitudinal studies of the British population. Longitudinal studies are designed to follow the same group of people over their lifetime. They can identify patterns of change and can show how particular characteristics and experiences affect what happens to people over the period in question.

The two surveys used in this study were the 1958 National Child Development Study (which is referred to as NCDS) and the 1970 British Cohort Study (referred to as BCS70). Both surveys involved a study of all babies, about 17 000, born in a particular week in Britain (the 'cohort'). Data about each cohort was collected at birth and follow-up surveys have been carried out at intervals over the years since then. These have included studies of the standards of literacy and numeracy and of many other aspects of the lives of the men and women in these two cohorts. This has made it possible to identify, by means of statistical analysis, the effect of poor literacy and/or numeracy on other aspects of people's lives.

An earlier study, 'Does Numeracy Matter?' (BSA, 1997), showed that people with poor numeracy tended to leave full-time education at the earliest opportunity and usually without qualifications, followed by patchy employment with periods of casual work and unemployment¹. Most of their jobs were low skilled and poorly paid and offered few chances of training or promotion. The impact of having poor literacy and numeracy skills has become greater as the number of unskilled manual jobs has declined and more and more jobs, such as those in the service sector and administrative work, require higher levels of skill, including ICT skills. These changes have particularly affected women.

In this new study, the aim was to see how far poor numeracy was a problem in its own right or whether its effects could not be separated from the effects of poor literacy.

Educational achievement

The study found that about 90 per cent of men and about 70 per cent of women with both poor literacy and poor numeracy left school at 16, compared with about 55 per cent of men and about 40 per cent of women with competent literacy and numeracy. The early leavers with poor literacy and numeracy were more likely to have no or few qualifications.

1. Bynner, J. and Parsons, S. (1997). **Does Numeracy Matter?** London: The Basic Skills Agency. Also see Bynner, J & Parsons, S. (2000), **Impact of Poor Numeracy on Employment and Career Progression**. Chapter 2 in Ticky C. and Woolf A. (Eds), 'The Maths We need Now: demands, deficits and remedies.' Bedford Way Papers, Institute of Education: London.

However, there were no significant differences between those with just poor numeracy and those with both poor literacy and poor numeracy.

'As the majority of men and women with a poor grasp of numeracy and/or literacy left full-time education at age 16, the rest of the report concentrates on differences in outcomes and experiences by literacy and numeracy level in this group.'

Employment between the ages of 16 and 29

Wider social changes have resulted in more women in the BCS70 cohort going out to work than in the NCDS cohort. Even so, while NCDS men with competent literacy and competent numeracy had spent 95 per cent of this period of their lives in full-time employment, and the equivalent BCS70 men (who were affected by the economic recession of the 1980s) were in full-time employment for 91 per cent of this time, the figures for women are only 65 per cent and 70 per cent .

However, NCDS men with poor literacy and poor numeracy spent only 86 per cent of their time in full-time employment, and BCS70 men 85 per cent. The equivalent figures for women are 53 per cent and 51 per cent , with many women spending time in part-time employment and full-time home caring roles.

Poor numeracy had a particularly negative effect on men's full-time employment in the 1980s recession, whether or not it was combined with poor literacy.

Employment at age 30

Overall, more women in the BCS70 cohort were in full-time work at this age than in the NCDS cohort. However, for those with competent literacy and numeracy, the proportion grew from 40 per cent to 52 per cent , whereas for those with poor literacy and numeracy it only grew from 30 per cent to 32 per cent . The effects of poor literacy and numeracy, and especially numeracy, weighed more heavily on women.

At the age of 30:

- men and women with poor literacy and poor numeracy had the lowest levels of full-time employment in their age-group;
- men and women with poor numeracy were more than twice as likely to be unemployed as those with competent numeracy;
- 70 per cent of men with poor literacy and/or numeracy were in manual jobs, compared with 50 per cent of those who were competent in both;
- men who were poor in both skills were more likely to be in semi-skilled and unskilled jobs, to have had fewer work-related training courses, to have lower weekly wages and poorer promotion opportunities;

Summary

- 40 per cent of women with low skills were in manual work, a much higher proportion than for all women of this age; and
- men with poor numeracy had the lowest hourly rates of pay.

Overall, poor numeracy rather than poor literacy was associated with low economic well-being at this age.

The last part of the study shows how the impact of poor literacy and poor numeracy varies between the men and women in BCS70 who were aged 30 in 2000.

Numeracy versus literacy For men, the combination of poor literacy and poor numeracy was significant. Compared to men with competent literacy and numeracy, such men were:

- more likely to be unemployed;
- if employed, more likely to be in semi-skilled or unskilled jobs;
- less likely to have used a computer at work;
- less likely to have received work-related training or promotion;
- less likely to be homeowners; and
- more likely to be in a non-working household.

Men with poor numeracy, irrespective of their standard of literacy:

- had less chance of being in a company pension scheme;
- were more at risk of depression;
- have little interest in politics; and
- were more likely to have been suspended from school, or arrested and cautioned by the police.

For women, poor numeracy, independently of the standard of literacy, is more significant.

Women with poor literacy and poor numeracy were:

- less likely to have received work-related training or promotion;
- less likely to own their own home; and
- more likely to have experienced depression.

Women with poor numeracy, irrespective of their standard of literacy, were:

- less likely to be in full-time work (regardless of how many children they had);
- if in work, more likely to be in semi-skilled or unskilled jobs;
- more likely to be engaged in home care;
- less likely to have interest in politics, or to vote;
- more likely to report poor physical health in the last 12 months;
- more likely to be in a non-working household;
- more likely to have low self-esteem; and
- more likely to feel they lacked control over their lives.

For both men and women, poor literacy, on its own, has barely any effect on life-chances at age 30.

Conclusion For men, there is no real difference between the effect of poor literacy and poor numeracy together, and poor numeracy alone.

For women, while the impact of low literacy and low numeracy skills is substantial, low numeracy has the greater negative effect, even when it is combined with competent literacy.

Changes in the nature of employment are at the heart of the problem of numeracy for women. Modern jobs of the kind that appeal to young women, e.g. managing accounts, or using ICT equipment for administration, demand numeracy skills.

It is worth emphasising that, both for men and for women, numeracy skills will decline if they are not used and practised in employment. This creates a vicious circle: poor numeracy leads to limited employment, which leads to declining numeracy, which makes it harder to obtain and stay in employment.

Poor numeracy skills make it difficult to function effectively in all areas of modern life, particularly for women. Government policy should therefore target policy on tackling poor standards of numeracy among the most disadvantaged sections of the female population, to counter the risk of social exclusion.

Introduction

It has long been recognised that a competent grasp of literacy is an essential skill, without which people can find it hard to function effectively in adult life. Numeracy skills, however, still remain undervalued, despite the growing importance that employers place on numeracy¹. There remains an inherent assumption among adults that being able to deal with numbers and graphics is not as important as being able to read and write competently².

In 1997, the report 'Does Numeracy Matter?' (BSA, 1997), was published³. It drew on data from the representative 10 per cent sample of the 1958 National Child Development Study (NCDS), one of the UK's four Birth Cohort Studies, who had their functional literacy and numeracy assessed when aged 37 in 1995. The report gave striking evidence that numeracy did matter. Taking into account literacy level achieved, it was found that men and women with poor numeracy suffered relative disadvantage in the increasingly demanding world of work, particularly in times of economic recession, compared with those with poor literacy alone. Women lacking numeracy appeared to be particularly disadvantaged. Poor numeracy was related to cohort members leaving full-time education at the earliest opportunity, most often without qualifications, leading to a patchy employment career typically marked by periods of casual work and unemployment. Difficulties were encountered in both getting and keeping jobs, which were generally low skilled, poorly paid and promising few training and promotion opportunities.

There are a number of features of the modern labour market that help to explain the disadvantage experienced by those without a competent grasp of numeracy and/or literacy. Foremost among those is the steady decline over the last 30 years in the numbers of unskilled jobs in manufacturing and the growth of the service industry. Strengthened health and safety regulations, increasing financial accountability demands on employees, and the technological transformation of work, including the centrality of ICT in the modern office, increased the need for literacy and numeracy skills in the workplace. Across the period 1971 to 2010 - the date for which the Moser⁴ basic skills targets are set - the proportion of the workforce in non-manual jobs is expected to rise from less than half to three fifths.

¹ Atkinson, J. and Spilsbury, M. (1993). **Basic Skills and Jobs**. London: The Basic Skills Agency.

² Bynner, J. & Parsons, S (1998). **Use it or Lose it?** London: The Basic Skills Agency.

³ Bynner, J. and Parsons, S. (1997). **Does Numeracy Matter?** London: The Basic Skills Agency. Also see Bynner, J & Parsons, S. (2000), **Impact of Poor Numeracy on Employment and Career Progression**. Chapter 2 in Ticky C. and Woolf A. (Eds), 'The Maths We need Now: demands, deficits and remedies.' Bedford Way Papers, Institute of Education: London.

⁴ Moser Report (1999). **A Fresh Start: Improving Literacy and Numeracy**. DfEE. London:HMSO.

Table 1. Employment trends by manual and non-manual occupations 1971-1999 and projections for 2010, UK

	1971	1999	2010
Total employment (millions)	24.2	27.5	29.7
Non-manual occupations	46%	56%	60%
Manual occupations	54%	44%	40%

Original source table derived from: Wilson (2001), CE/IER estimates F02F9 Forecast. The macroeconomic and industrial employment scenario is based on Cambridge Econometrics (July 2000).

In 1991 at age 21, a 10 per cent representative sample of 1623 members of the more recent 1970 British Cohort Study (BCS70) also had their functional literacy and numeracy assessed. To investigate the effects of numeracy vis à vis literacy, as in the earlier 1958 cohort analysis, a fourfold typology was used embracing combinations of competent and poor numeracy and literacy skills, as defined in the following pages

This report starts with the relationships between numeracy, education and qualifications. We then compare the employment experiences of the 1958 NCDS cohort between the ages of 16 and 29 (1975 to 1987) with that of BCS70 between the same ages (1987 to 1999).

The 1970 cohort is a particularly important cohort in policy terms because its labour market experience, beginning in the mid-1980s, followed the major labour market transformations and economic recessions of the previous period, and reflects well the employment experience of today.

We then develop the scope of our previous investigations by focusing the analysis on early school leavers: those who had left full-time education at 16. This helps isolate the influence of basic skills from qualifications gained from school on employment.

Finally we use the multivariate analysis technique of logistic regression to estimate the impact of numeracy (compared to literacy) on a number of adult outcomes at age 30 in the spheres of occupation, home and family life, health, psychological well-being and political and social participation.

Because of the different experiences of men and women all analyses were carried out for the two sexes separately.

Introduction

Where does the data come from

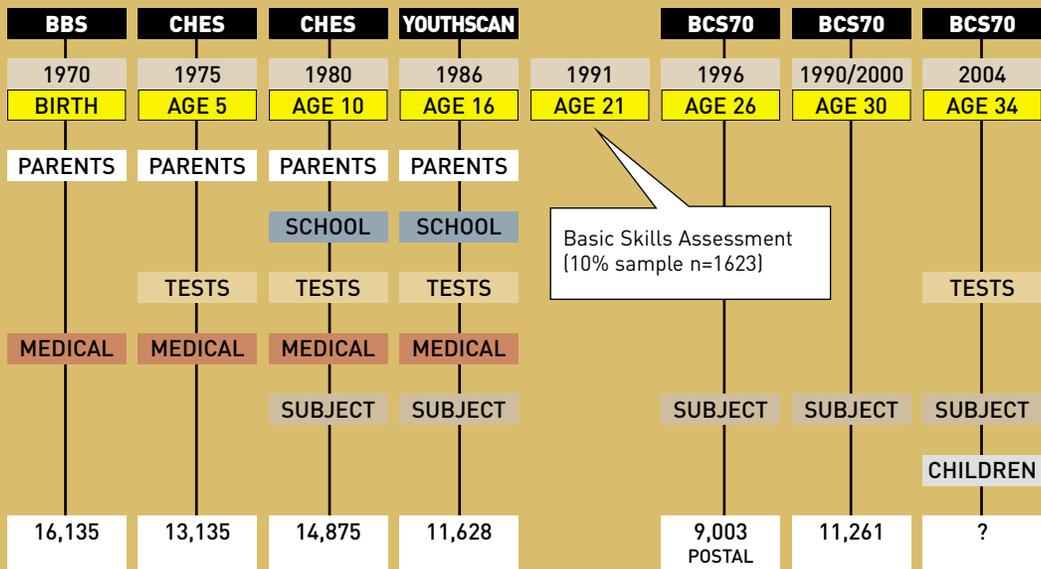
■ The 1958 National Child Development Study (NCDS) is a longitudinal survey of approximately 17,000 people born in one week in March 1958. Follow-up surveys have been conducted at age 7, 11, 16, 23, 33, 42 and most recently at age 46.

■ In 1995, a representative 10 per cent of this cohort (1,714 individuals, aged 37) were assessed for functional literacy and numeracy skills. This data set formed the basis of 'Does Numeracy Matter?' (BSA, 1997).

■ The 1970 British Cohort Study (BCS70) is similarly a longitudinal survey of approximately 17,000 people born in one week in April 1970. Follow-up surveys have been carried out at ages 5, 10, 16, 26, 30 and most recently at age 34

■ In 1991, a representative 10 per cent sample (1,623 individuals, aged 21) completed an assessment of their literacy and numeracy skills.

BCS70 follow-up studies from 1970–2004



The research methodology and assessments

BCS70 age 21 survey The functional skills of 10 per cent of the BCS70 cohort (1,623 individuals aged 21) were assessed in 1991 using assessment instruments that were similar in content and format to those used in the 1958 cohort and were similarly linked to the different levels of the Adult Literacy and Basic Skills Unit, subsequently the Basic Skills Agency, standards of the time – Wordpower and Numberpower⁵. These levels map approximately, but not precisely, onto the standards used by the *Skills for Life* strategy. The instruments were designed to assess respondents' 'functional' skills, i.e. their ability to perform everyday tasks that involved using number or interpreting written communications. For literacy, for example, the tasks varied from extracting simple information from posters or the Yellow Pages, through to questions about the meaning of a relatively complex piece of text, e.g. an article about the symptoms of hypothermia. Numeracy tasks similarly ranged from everyday operations in shops and in the home, e.g. how to set a video to record a programme using the 24-hour clock, through to extracting information from graphs and timetables. The approach was paper-based and 'open-response', i.e. there were no constraints imposed on answers as there would be in a multiple-choice test. Answers were given in response to questions and visual stimuli supplied by trained interviewers. The results of the earlier (1958 cohort) and later (1970 cohort) studies of numeracy and literacy are therefore broadly comparable.

The purpose of our analysis was to establish measures of literacy and numeracy that could be used in statistical analyses of change and comparison over time. Since the content and the difficulty levels of the items in the 1991 tests were similar to those covered by the *Skills for Life* standards, we could assume that they would rank order respondents in much the same way, which is the essential requirement for our purpose.

BCS70 age 30 survey Of the 1,623 BCS70 cohort members whose literacy and numeracy were assessed in 1991 when they were aged 21, 1,352 (83 per cent) took part in the 2000 follow-up survey when they were aged 30⁶. Table 2 shows the distribution of the original 1991 and reduced 2000 sample by their grasp of literacy and numeracy.

⁵ For a more detailed account of the issues see Parsons, S. and Bynner, J. *Measuring basic skills for longitudinal study* (2005). London: NRDC.

⁶ The reduced sample has a slight under-representation of men and of those in the most disadvantaged groups.

Table 2. Distribution of BCS70 cohort members by literacy and numeracy: 1991 and 2000

	LITERACY					NUMERACY				
	1991 age 21		2000 age 30		2000 as % of 1991	1991 age 21		2000 age 30		2000 as % of 1991
	%	n	%	n		%	n	%	n	
very low	8	132	7	100	76	27	435	26	346	80
low	16	264	15	204	77	21	347	22	300	86
average	30	483	30	410	85	24	389	25	333	86
good	46	744	47	638	86	27	452	28	373	83
<i>n(100%)</i>		1623		1352	83		1623		1352	83

If there is any bias in the figures presented later in this report, it is likely to be conservative, that is, an underestimation of the number of cohort members with poor numeracy and/or literacy. This is because those assessed as having very low literacy in 1991 were the least likely to be involved in 2000 - the number fell from 132 to 100 (76 per cent). However, the distribution of the reduced sample of cohort members taking part in 2000 across literacy and numeracy groups is very similar to that of the original 1991 sample

The numeracy-literacy typology

To allow us to explore how far numeracy problems were subsumed under literacy problems, or how far they constituted a significant problem in their own right, we constructed a fourfold typology using the categories 'competent' or 'poor' numeracy and 'competent' or 'poor' literacy. The first task was to identify respondents with 'poor' numeracy and 'poor' literacy, as opposed to 'competent' numeracy and 'competent' literacy. The 'poor' numeracy group was defined as those with a 'very low' numeracy test score.

However, the small number with 'very low' literacy scores meant that the 'poor' literacy group was defined as those with either 'very low' or 'low' scores. At the other end of the scale, 'competent' numeracy was defined by 'low', 'average' and 'good' numeracy test scores and 'competent' literacy was defined by 'average' and 'good' test scores.

Table 3 shows the distribution of respondents across the resultant fourfold typology for both NCDS and BCS70.

Table 3. BCS70 cohort members by combined grasp of numeracy and literacy, compared with NCDS cohort members.

	NCDS			BCS70		
	all	men	women	all	men	women
	%	%	%	%	%	%
Poor numeracy + literacy	12	9	15	14	11	17
Poor numeracy + competent literacy	11	9	12	11	8	14
Competent numeracy + poor literacy	7	7	7	8	8	8
Competent numeracy + literacy	70	75	67	66	73	61
<i>n(100%)</i>	1701	798	903	1352	569	763

Notably, a slightly lower proportion of men and women in BCS70 had a 'competent' grasp of both numeracy and literacy than in NCDS. This may reflect the much younger age of the BCS70 respondents when they were assessed (age 21 compared to 37) and we might expect that, with age and experience, their functional numeracy would improve. Alternatively, there may have been a genuine decline between the earlier and later cohorts in the acquisition of numeracy skills.

However, the overall distributions for the two cohorts across the combined skills typology were remarkably consistent. In both cohorts, the majority of men and women were competent in literacy and numeracy; roughly 3 in 4 men (75 per cent NCDS, 73 per cent BCS70) and 2 in 3 women (67 per cent NCDS, 61 per cent BCS70). As in 'Does Numeracy Matter?' our interest here is focused on the men and women in BCS70 who were poor (i.e. not competent) in numeracy, irrespective of their literacy. As shown in table 3, more women than men in BCS70 had poor numeracy combined with poor literacy (17 per cent to 11 per cent) or poor numeracy and competent literacy (14 per cent to 8 per cent). An identical proportion of men and women (8 per cent) had competent numeracy and poor literacy.

Numeracy and educational achievement

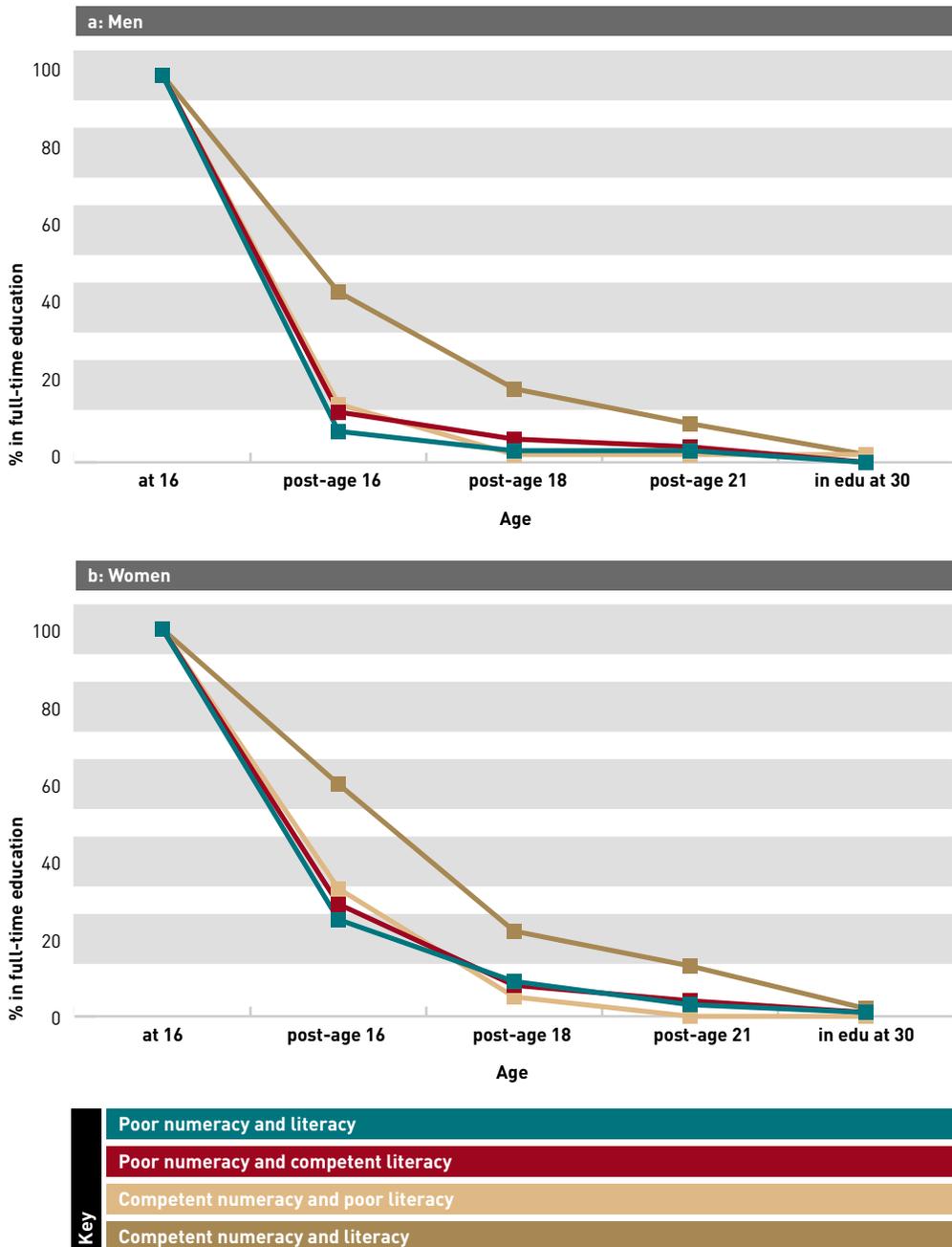
Early leaving In 'Does Numeracy Matter?' the culmination of poor educational experiences among men and women with poor numeracy and/or poor literacy was evident in their early exit from the compulsory education system. Among the BCS70 cohort, competent numeracy also had a slightly stronger relationship to staying on in full-time education than competent literacy, particularly among men⁷. Figures 1a and 1b show that more women than men remained in full-time education after age 16, but there was a mass exodus of men and women with either a poor grasp of numeracy or literacy from full-time continuous education at age 16; between 85–92 per cent of these groups of men, and 67–75 per cent of the comparable groups of women left at the minimum statutory age.

By concentrating further analysis of adult outcomes among the 387 men and 401 women who were identified as early school leavers, the strong potentially confounding influence of post-16 education and associated qualifications on the later occupational profiles and experiences of the cohort members was greatly reduced.

⁷ However, all the correlations between basic skill and age of leaving were highly significant ($p < .001$).

Numeracy and educational achievement

Figure 1. Men: percentage of men in full-time education between age 16 and 30 by their grasp of numeracy and literacy

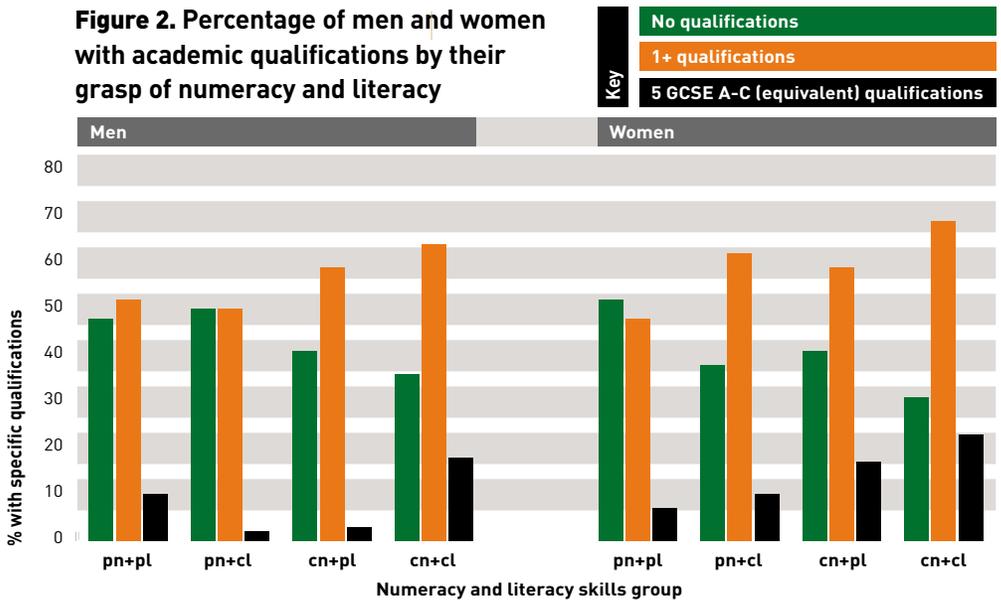


Numeracy and educational achievement

Qualifications BCS70 cohort members were among the last school leavers to experience the two-tiered examination system of GCE O’Levels and CSEs that preceded the GCSE system. One of the best documented education yardsticks of today is the percentage of children within a school who attain five or more GCSEs at grade A–C by age 16. Across the whole cohort who provided information on qualifications in 2000 (n=11,194), 33 per cent achieved the equivalent of this standard; among early school leavers the percentage was just 15 per cent⁸.

Figure 2 shows that among early school leavers men and women with competent numeracy and literacy were the most likely to have achieved the ‘magic five’ (18 per cent men and 23 per cent women). Following this group, the three groups with evidence of at least one poor basic skill showed a lower level of achievement, with women doing better than men. Unaccountably men with poor numeracy and literacy were the next most likely to have achieved the equivalent of the 5 A–C standard (10 per cent); whereas for women the equivalent achievement was among those with ‘competent numeracy and poor literacy’ (17 per cent). However, the small numbers involved meant that the percentage differences were not statistically significant. Screening out the early school leavers had effectively removed most of the qualification differences among the groups.

Figure 2. Percentage of men and women with academic qualifications by their grasp of numeracy and literacy



pn+pl = poor numeracy and poor literacy; pn+cl = poor numeracy and competent literacy; cn+pl = competent numeracy and poor literacy; cn+cl = competent numeracy and competent literacy.

⁸ This included CSE Grade 1, GCSE Grade A-C, O’ Level Grade A-C.



Numeracy and labour market experience

Labour market activity: full-time employment Early school leavers in BCS70 were defined as those who were no longer in full-time education six months after the end of compulsory education at 16, i.e. by January 1987. Between January 1987 and December 1999, four months before their 30th birthday, there were 13 years or 156 months of economic activity to be accounted for. As full-time employment is what most men and increasingly women spend most time doing we first examined the association of poor numeracy and/or literacy with the percentage of men and women in each skills group in a full-time job in each year, together with the cumulative amount of time cohort members spent in full-time employment and other economic activities. Experiences were compared with those of the early school leavers in the older NCDS cohort over the equivalent 13 full years from January 1975 – December 1987⁹.

Figures 3 (a) and (b) compare, for NCDS and BCS70, the percentages of early school leaver men with poor numeracy and/or poor literacy spending most of their time in full-time jobs at different ages between ages 16–29. Figures 4 (a) and (b) make the same comparison for early school leaver women.

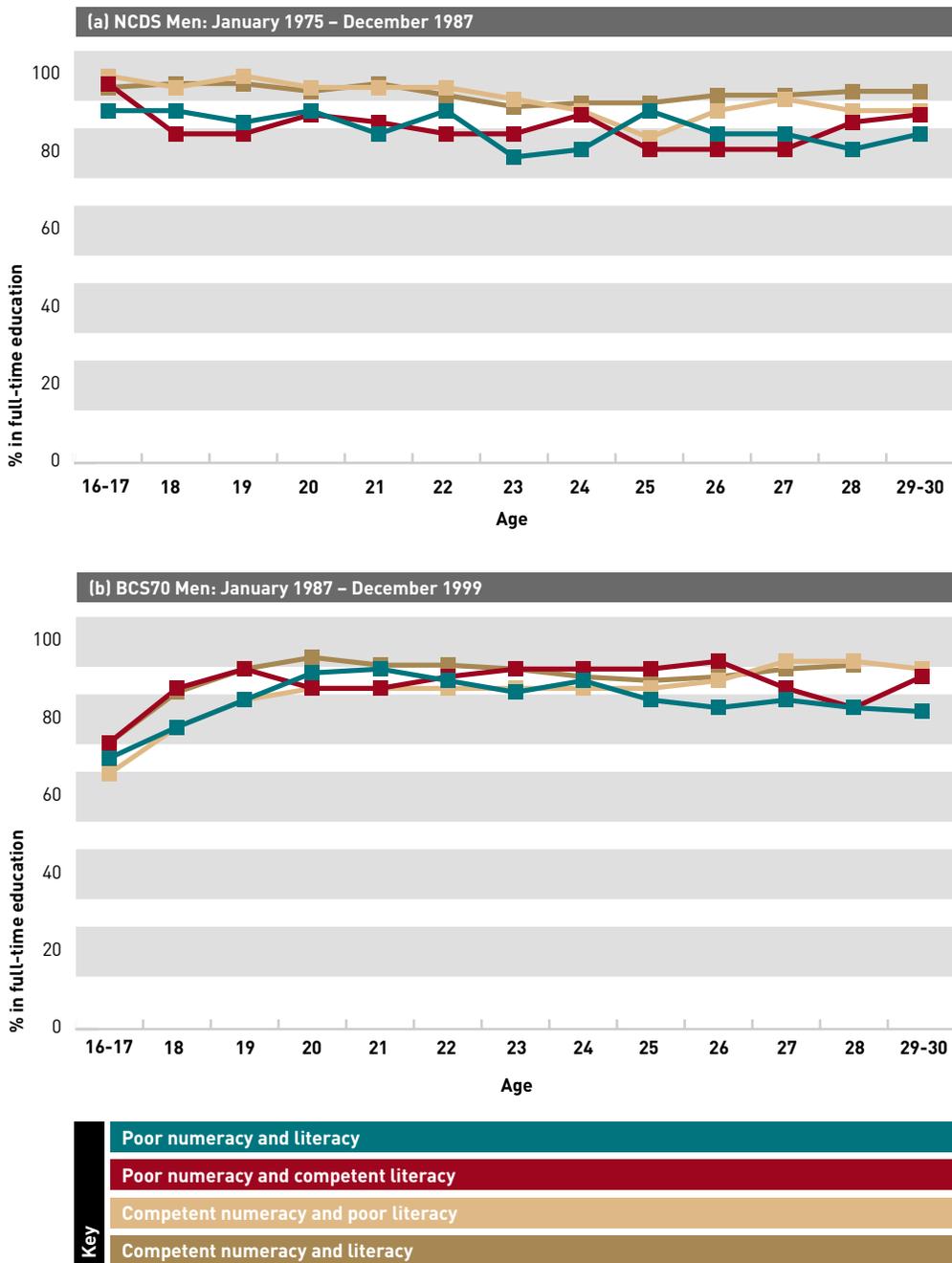
Figures 3 (a) and (b) both show fairly steady employment rates across the period with some fluctuations. In NCDS the recession in the early-mid 1980s (around age 23) particularly appeared to hit men with poor numeracy as shown by the dip in the rates exacerbated for the 'poor numeracy and poor literacy' group. But men with 'poor numeracy and competent literacy' were also more likely to be out of the full-time labour market compared with those with competent numeracy, whose employment rate remained relatively stable.

For BCS70, this pattern was only partly confirmed. During the teens, although full-time employment was the most common experience, the Youth Training Scheme (YTS) was also prominent, reducing employment rates. Through early adulthood there was little separation between the four groups, but from age 27 onwards those with poor numeracy and poor or competent literacy again had the lowest employment rates.

⁹ Employment status can differ within an individual year. The employment status attributed to an individual was decided by the highest number of months spent in one employment category during any one year. For example, if 4 months were spent in a part-time job, 5 months in a fulltime job and 3 months unemployed, a full-time employment status was awarded. If an equal number of months had been spent in part-time and full-time employment, a full-time employment status was given.

Numeracy and labour market experience

Figure 3. Men: percentage of early school leavers in full-time employment



Numeracy and labour market experience

Figure 4 shows the well documented steady exit from full-time employment of women from the highest levels of engagement in the teenage years. However, for women in the more recent BCS70 cohort this exit between 16–29 was more moderate. More women in BCS70 remained in full-time employment through their twenties, reflecting the increase in the average age that women have children¹⁰. This difference in the engagement of women in NCDS and BCS70 was most marked among those with competent numeracy and literacy. However, among women with poor numeracy and literacy the exit from full-time employment actually remained as steep in BCS70 as it had been in NCDS.

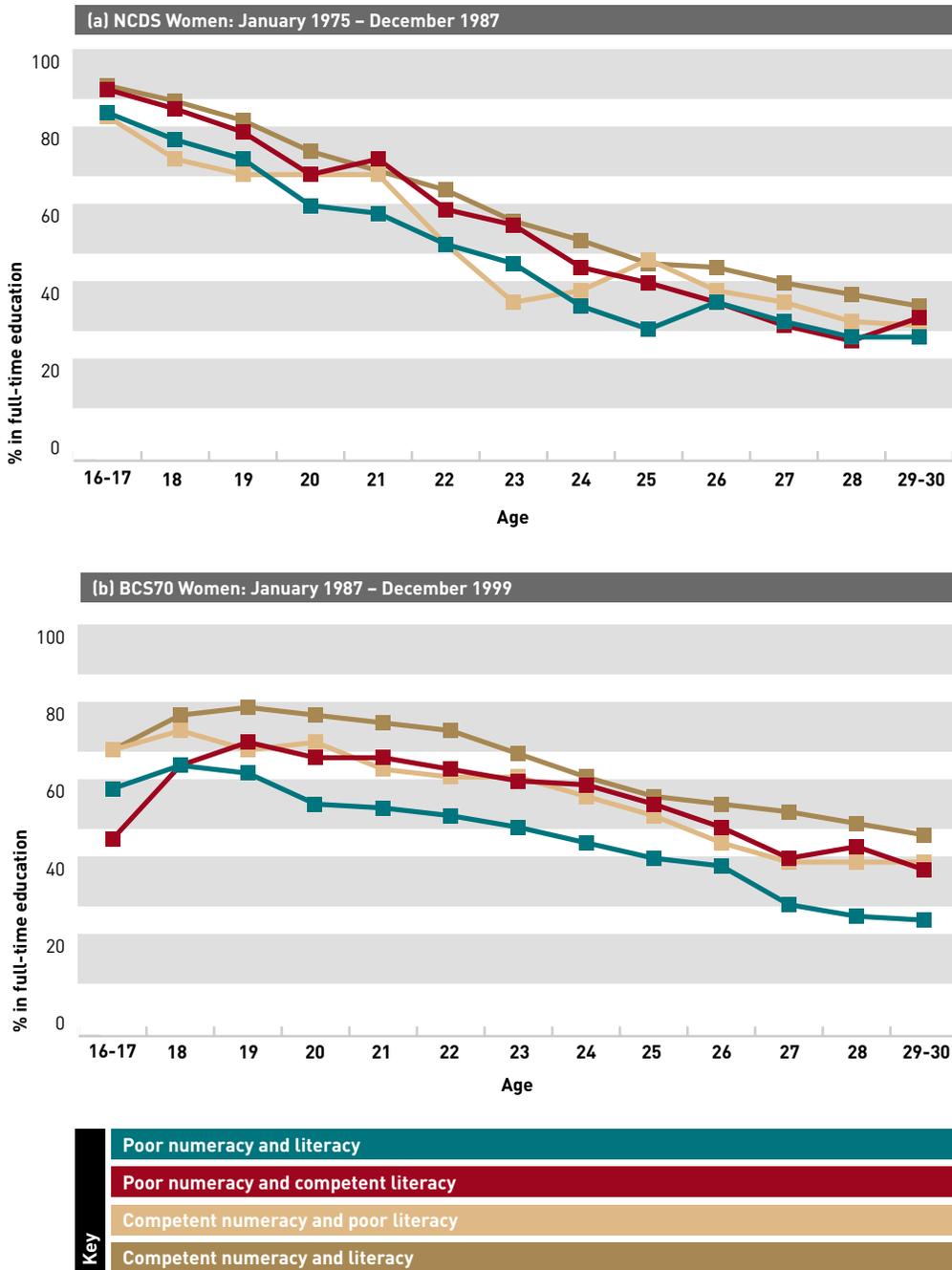
Focusing on differences in employment rates for age 29–30 we see that in NCDS (figure 4a) the percentage of women with competent numeracy and literacy in full-time employment was 40 per cent compared with 32 per cent of women with poor numeracy and literacy, a gap of just 8 per cent. The corresponding percentages for women in BCS70 (figure 4b) were 52 per cent and 30 per cent respectively - a difference of 22 per cent.

This shift points to growing polarisation of women's employability with respect to their basic skills and the increased marginalisation of those in the more recent cohort who lack basic skills. This is particularly so for those lacking numeracy as we shall see when considering part-time employment.

¹⁰ e.g. Woods, L., Makepeace, G., Joshi, H. and Dolton, P. (2003). 'The World of Paid Work', in: E. Ferri; J. Bynner and M. E. Wadsworth (Eds.) **Changing Britain, Changing Lives. Three Generations at the Turn of the Century**. London: Institute of Education Press.

Numeracy and labour market experience

Figure 4. Women: percentage of early school leavers in full-time employment



Numeracy and labour market experience

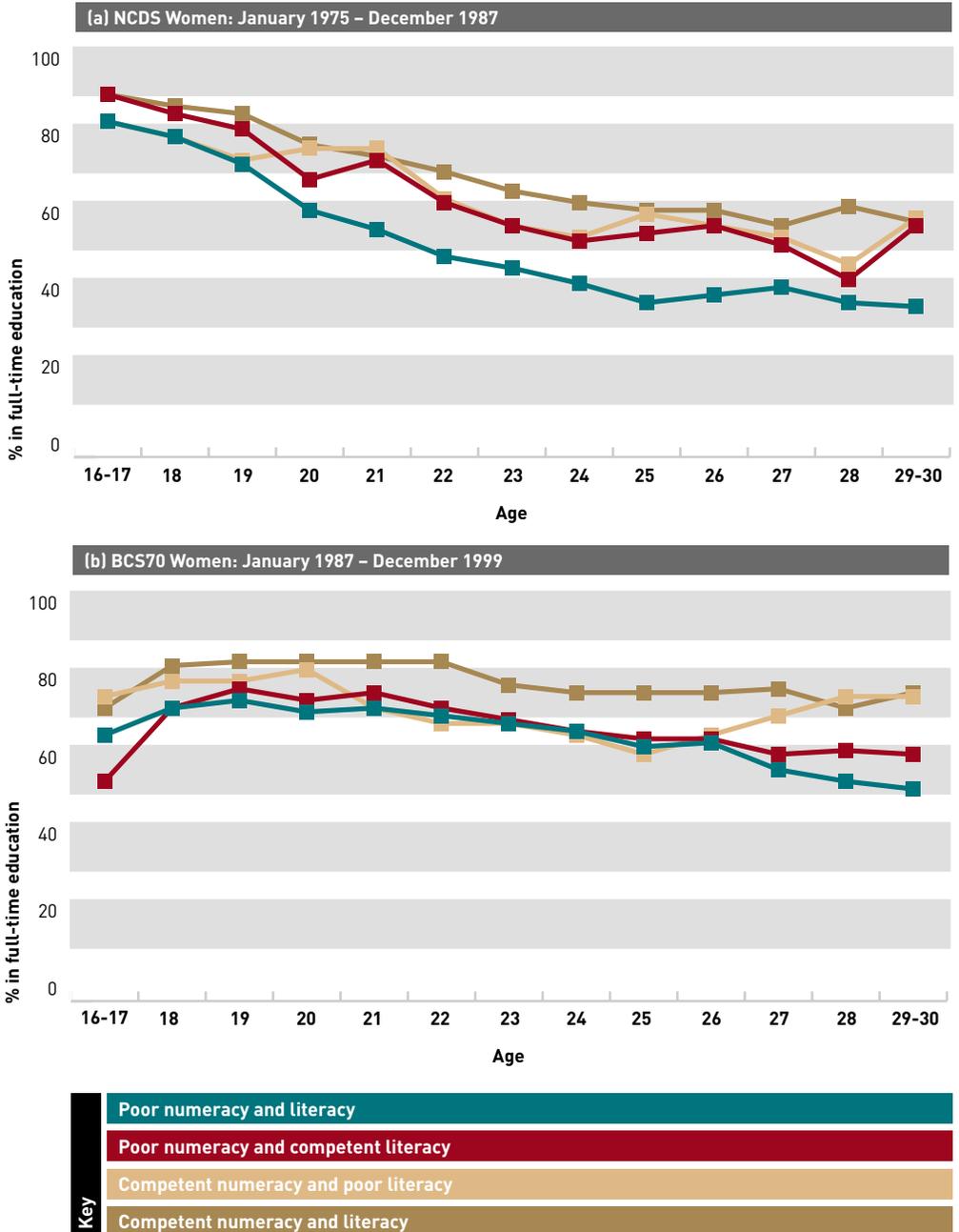
Effect of part-time employment for women

Unlike men, when women are not in full-time employment they are very often engaged in part-time work. Figures 5 (a) and (b) show women's employment rates but this time including time spent in part-time jobs. The reduced gradients of the graphs show that women increasingly moved into part-time work to accommodate childcare, career and economic circumstances. Notably, compared with the BCS70 women, the steeper gradient for the older NCDS women shows that more of them followed a full-time home-care role. For BCS70 women with 'competent numeracy and competent literacy', participation in paid employment only dropped below 80 per cent in one year, bringing it close to the participation levels of men. This was in contrast to comparable women in NCDS, where a steady decline from 80 per cent to 60 per cent occurred from age 20.

Women in both cohorts with 'poor numeracy and poor literacy' still had the weakest link to paid work, though in the case of BCS70 up to age 27 there was little to separate all three poor skills groups, i.e. the gap lay between the group competent in the basic skills and those who were deficient in at least one. From then on those with poor numeracy were the least likely to be employed.

Numeracy and labour market experience

Figure 5. Women: percentage of early school leavers in full-time or part-time employment



Numeracy and labour market experience

Cumulative labour market experience from ages 16 to 29

The graphs just displayed show the percentages of early school leavers participating in employment year by year between age 16–29. We can take this analysis further by aggregating cohort members' experience of different labour market statuses: full-time employment, part-time employment, employment training, full-time education, home care, unemployment and out of the labour market ¹¹.

As we might expect, the dominant activity for men across the whole period was full-time employment with less than 5 per cent of the time spent in any other status including unemployment and 'out of the labour force'. For women, although full-time employment was similarly the main activity, substantial proportions of time were also spent in other statuses including part-time employment and home/family care, with a marked decline in the home/family care percentage from the earlier NCDS cohort to the more recent BCS70 cohort. Table 4 shows that from age 16 to age 29, depending upon which of the four skills group they were in, between 12–17 per cent of the BCS70 women's time was spent in part-time work, whereas for women in NCDS just 5–8 per cent of their time was in part-time work. Conversely, time spent in a 'home/family care' role declined from between 25–37 per cent for women in NCDS to between 12–25 per cent for women in BCS70. These cohort differences show again the strengthening relationship between the younger generation of women and the labour market, particularly through the combination of a home care role with a part-time job.

In both cohorts men and women with 'competent numeracy and competent literacy' spent the most time in full-time employment:

- **NCDS men 95 per cent, BCS70 men 91 per cent.**
- **NCDS women 65 per cent, BCS70 women 70 per cent.**

Men and women in the 'poor numeracy and poor literacy' group spent the least time in full-time employment:

- **NCDS men 86 per cent, BCS70 men 85 per cent.**
- **NCDS women 53 per cent, BCS70 women 51 per cent.**

Among the NCDS men there was more experience of unemployment in the low skilled groups, with the highest percentage being among those with both poor numeracy and literacy. For BCS70, poor literacy appeared the more important factor but numbers were too small to be certain or establish statistical significance. For

¹¹ 'Out of the labour market in this instance' = permanently or temporarily sick, other.

Numeracy and labour market experience

women, the situation was reversed. Although there were barely any differences between the groups in the time spent unemployed, for those in the equivalent 'out-of-labour-force status' of home care, the differences were substantial. This time the NCDS cohort clearly showed a closer link of home/family care with poor literacy rather than with poor numeracy. For women in BCS70, home/family care was identified with both 'poor numeracy and poor literacy'.

Table 4. Percentage of women in home-care and part-time employment and other statuses compared across the basic skills groups

BASIC SKILLS GROUPS	EMPLOYMENT STATUS	NCDS	BCS70
		%	%
poor numeracy + literacy	Home/family care	37	25
	Part-time work	5	17
	Full-time education	0	1
	Unemployment	4	3
	Total	46	46
poor numeracy + competent literacy	Home/family care	28	19
	Part-time work	9	10
	Full-time education	0	3
	Unemployment	2	6
	Total	39	38
competent numeracy + poor literacy	Home/family care	31	20
	Part-time work	8	14
	Full-time education	0	0
	Unemployment	5	2
	Total	44	36
competent numeracy + literacy	Home/family care	23	12
	Part-time work	8	12
	Full-time education	0	2
	Unemployment	2	1
	Total	33	27

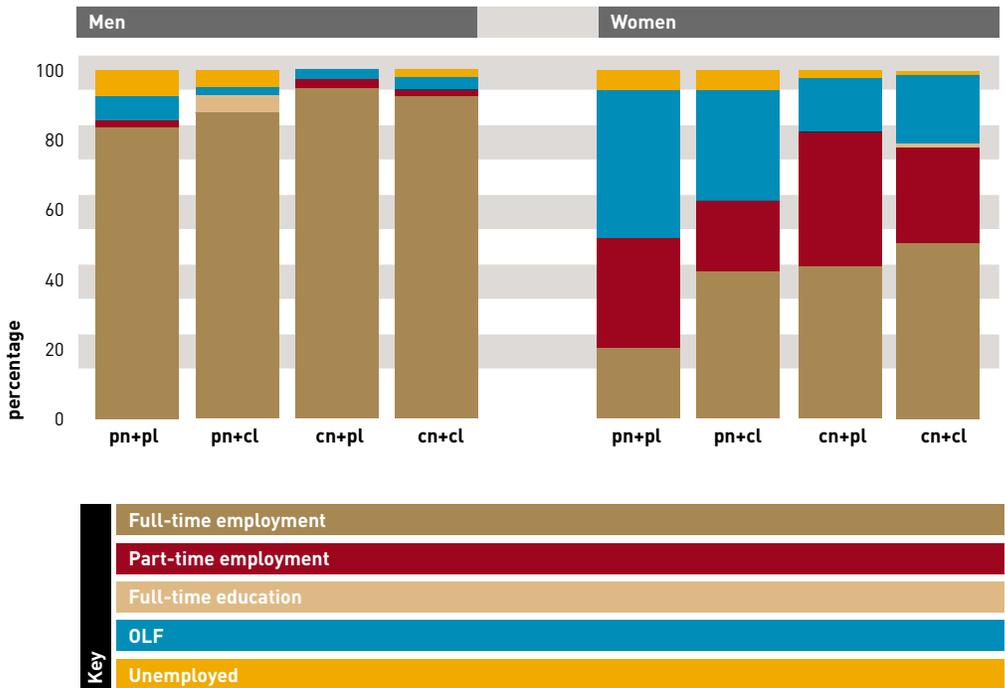
Employment at 30

The data presented so far relate to the whole period of labour market experience for early school leavers from 16–29, and point to the growing importance of basic skills to the more recent cohort. We now complete the picture by examining the most up-to-date figures just for BCS70 - that prevailing in 2000 at the time of the interview at age 30.

Full-time labour market participation

In figure 6 we see that by age 30 men and women with poor numeracy and poor literacy still had the lowest levels of full-time labour market participation, with poor numeracy more strongly related to lack of paid employment than poor literacy. For women, the picture was sustained even when part-time employment was included. Moreover, unemployment was twice as likely among men and women with poor numeracy as among those with competent numeracy: one in two of the women with 'poor literacy and poor numeracy' were out of the labour force or unemployed compared with two fifths of those with 'poor numeracy and competent literacy'. This compares with just less than one in ten of those with 'competent numeracy and poor literacy' and slightly more among those with 'competent literacy and competent numeracy'.

Figure 6. Current employment status at age 30

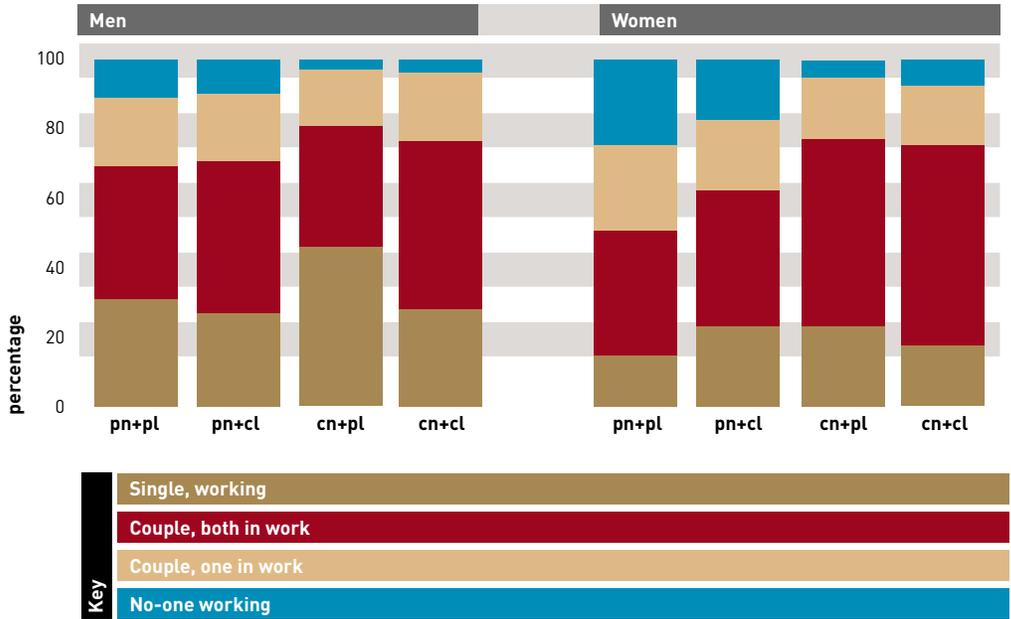


- Manual labour** Among the early school leavers 70 per cent of men in all three poor skills groups were in manual jobs. This compares with just under 50 per cent in the 'competent literacy and competent numeracy' group. Men with 'poor numeracy and poor literacy' were more likely to be in semi-skilled or unskilled manual jobs. Women's employment was mainly non-manual, but particularly among those with 'poor numeracy and poor literacy' just over two fifths were engaged in manual work. This reflects these women's reduced access to the traditionally desirable office-based 'administrative or secretarial' work. For both men and women, poor numeracy appeared to reduce the likelihood of employment that required the use of a computer, particularly if this was coupled, in the case of men, with poor literacy.
- Opportunities within work** In the earlier work on the NCDS cohort, poor numeracy was associated with restricted access to job opportunities within work itself. Men and women with poor numeracy and/or literacy had been on fewer training courses early on in their careers, whereas poor numeracy or literacy appeared to restrict training opportunities later on. More men and women with poor numeracy also earned a substantially lower weekly wage than other employees. In BCS70, poor numeracy was again negatively associated with access to and take-up of work-based training and promotion opportunities, although engagement was lowest among those with both 'poor numeracy and poor literacy'. In addition, more men with poor numeracy worked for companies or firms that were less likely to offer company shares or a company pension, or to give paternity leave. Women with poor numeracy were also less likely to have been offered the opportunity to buy company shares, or to take maternity leave over and above statutory maternity leave. They were also less likely to receive travel and other fringe benefits, particularly so if they also had poor literacy.
- Economic well-being** Among all early school leavers in BCS70, the average gross hourly wage in 2000 for men and women in full-time employment was £9.25 and £8.16 respectively. Hourly earnings for earners in the bottom quarter of the earnings distribution were below £6.44 for men and £6.11 for women. Small numbers in full-time work, particularly women, restricted any meaningful analysis of the relationship between poor numeracy and earnings for them. But for men there was a clear difference between the basic skills, with men whose numeracy was poor earning the least per hour - at just £7 an amount that was close to the lower end of all earners.

Employment at 30

Poor numeracy was also associated with being part of a 'non-working' household. Twice as many men with poor numeracy were part of a non-working household in comparison with men with competent numeracy. In figure 7 we see that among women those with poor numeracy were up to three or four times as likely to be in such a household, particularly if poor numeracy was coupled with poor literacy.

Figure 7. Family working status at age 30 by combined numeracy and literacy



Social and psychological well-being

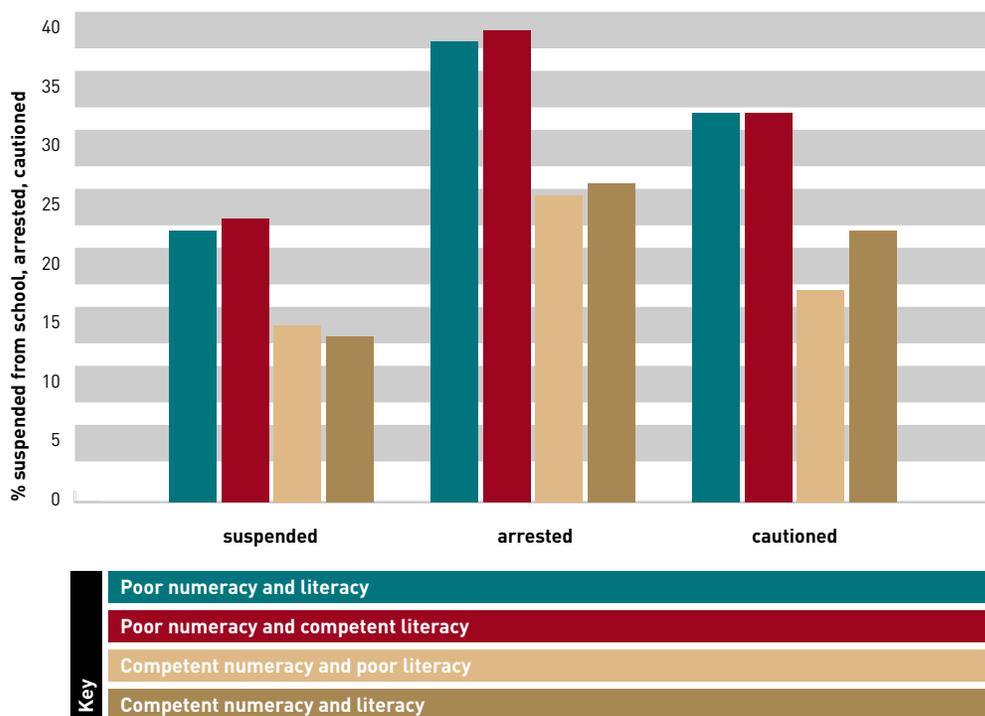
Social outcomes

We have seen that for BCS70, poor numeracy, rather than poor literacy, was associated with poor economic well-being. Was poor numeracy similarly a problem in other areas of cohort members' adult lives?

Men and women with poor numeracy were least likely to be home owners, and more women with poor numeracy experienced a spell of homelessness. There were no clear differences with respect to healthy lifestyle behaviour – not smoking, not drinking alcohol, eating well and taking exercise, but more women with poor numeracy reported their health to have been 'poor' in the last 12 months. Among women, poor numeracy was also associated with low levels of political interest – they were least likely to vote.

In line with previous research¹², BCS70 men with poor numeracy, whatever their grasp of literacy were more likely to have been in trouble with authority at various times in their lives. Figure 8 shows that the two groups of men with poor numeracy were the most likely to have reported suspension from school, arrested and cautioned by the police.

Figure 8. Percentage of men who were suspended from school or arrested and cautioned by the police



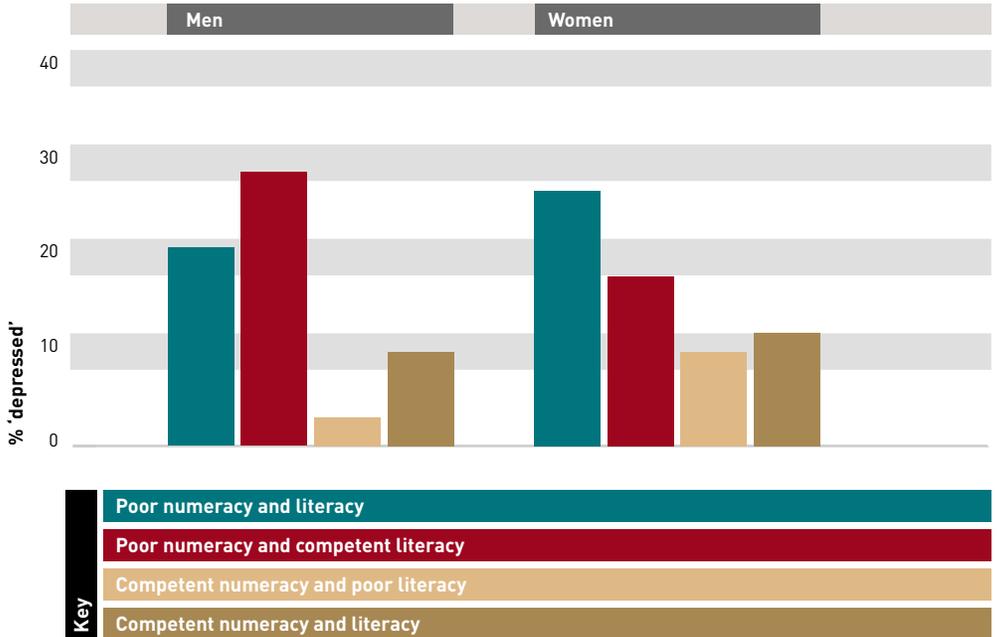
¹² Parsons, S. (2002): *Crime and Basic Skills*. The Basic Skills Agency: London.

Social and psychological well-being

Psychological state

Poor numeracy, more than poor literacy was associated with lower self-esteem, particularly among women. Women with poor numeracy and literacy were also more likely to report feeling that 'I usually find life's problems just too much for me' and that 'Whatever I do has no real effect on what happens to me'. The association of symptoms of depression with poor basic skills, particularly among women, is well established from our earlier work¹³. Figure 9 shows the relationship in BCS70 for the 'Malaise' scale - an instrument comprising 24 indicators of depression for which endorsement of more than 7 signifies depression¹⁴. The figure shows, that it was poor numeracy rather than poor literacy that related to increased scores on the Malaise scale. Notably, the differences between skills groups in terms of percentages who had been depressed, were most marked among men.

Figure 9. Percentage of men and women 'depressed' on the Malaise scale at 30



13 Bynner, J. and Parsons, S. (2001) Qualifications, basic skills and accelerating social exclusion, *Journal of Education and Work*, 15: 279-291. 14 See Rutter, M., Tizard, J. and Whitmore, K. (1970) *Education, Health and Behaviour*. London: Longman.

Numeracy vs literacy effects

Our previous research pointed to the influence of family socio-economic background and education experiences on poor acquisition of basic skills¹⁵ and suggested that the poor acquisition of these were associated with negative socio-economic outcomes in adulthood, such as unemployment, even when these family background and other influences were taken into account¹⁶.

So far in this report we have shown that even when comparisons are restricted to early school leavers, men and women with poor numeracy and/or poor literacy appear to have more difficulty in succeeding in a number of areas of adult life in comparison with men and women who have a good grasp of the basic skills.

Logistic regression analysis

To make a more robust assessment of the influence of a poor grasp of numeracy and/or literacy on the various age-30 outcomes in adulthood, we analysed the data using the statistical technique of logistic regression. The details of the methods and the statistical results are given in the appendix. We focus here on the main findings. The outcomes included employment, social participation, health and well-being.

Broadly, logistic regression enables us to predict whether individuals with poor numeracy compared with others are at risk of experiencing one of these outcomes, such as unemployment at age 30, taking account of other characteristics. A particular interest is whether the qualifications achieved by an individual override the effect of having poor numeracy. Accordingly, there were two stages to the analysis. In the first stage the outcomes were predicted just from membership of the four categories of the numeracy/literacy typology. In the second stage, highest qualification achieved was also included to see whether in the presence of this potentially competing influence, the predictive power of numeracy especially was sustained.

Results

The following results are based on comparing the strength of prediction of the adult outcomes from membership of the first three categories of our typology: (a) poor literacy/ poor numeracy; (b) poor numeracy/competent literacy; (c) competent numeracy/ poor literacy; with (d) competent literacy/competent literacy, serving as a reference category or baseline. The numeracy 'effect' is demonstrated when a statistically significant prediction is obtained for (b) but not for (c). When only (a) shows the significant prediction, then poor literacy and poor numeracy only in combination (i.e. poor basic skills generally) are implicated in the negative outcome. When (c) but not (b) shows the significant prediction then poor literacy is identified as the key factor in the negative outcome rather than poor numeracy.

¹⁵ Bynner, J. and Steedman, J. (1995) **Difficulties with basic skills**, London: Basic Skills Agency. ;Parsons, S., & Bynner, J. (1998): **Influences on Adult Basic Skills**. The Basic Skills Agency: London.

¹⁶ Bynner and Parsons (2001). "Qualifications, basic skills and accelerating social exclusion", **Journal of Education and Work**, 14: 279-291

Numeracy vs literacy effects

ac heading In the first stage of the analysis substantially more statistically significant effects on the age-30 outcomes were evident for numeracy than for literacy (b compared with c) for both men and women. However in the second stage of the analysis, with highest qualification controlled, the picture changed for men and women. For men most of the effects lost statistical significance whereas for women they were sustained. In other words, for men the key predictor of the age-30 outcomes was poor basic skills generally, i.e. both poor numeracy and poor literacy together, whereas for women poor numeracy was the more important predictor.

Men With three exceptions negative outcomes were predicted by literacy and numeracy together, i.e. poor basic skills generally appeared to be implicated in the negative outcome rather than numeracy or literacy alone.

Employment Men with poor basic skills were less likely than others to be in a full-time job. They were more likely to be unemployed and more likely to be in semi-skilled or unskilled employment.

Employment-related Men with poor basic skills were also less likely to use a computer at work and less likely to have received work-related training and to have had the opportunity for promotion in their current employment. However, participation in a company pension scheme was also less likely for men with poor numeracy even when their literacy was good.

Other economic outcomes Men with poor basic skills were less likely to be home owners and more likely to be part of a non-working household.

Social participation and crime Political interest was the only outcome examined to have the stronger connection with poor literacy rather than poor basic skills generally. Men with poor literacy were more likely to lack political interest.

Before highest qualification was controlled, poor numeracy strongly predicted the risk of being arrested. The relationship lost statistical significance, however, once highest qualification was controlled. This shows that the strong association between crime and numeracy demonstrated earlier can probably be attributed largely to educational achievement rather than to numeracy independently.

Health and well-being Men with poor basic skills were more likely to feel they lacked control over their lives. However, independently, men with poor numeracy were also more likely to be at risk of depression.

Numeracy vs literacy effects

Women For women, even when highest qualification was controlled, poor numeracy - independently of literacy - continued to predict most of the negative outcomes in adulthood.

Employment Women with poor numeracy were less likely to be in a full-time job at age 30. They were also less likely to be in any form of paid employment (including part-time), and more likely to be engaged in home care. Among those in work, poor numeracy also predicted being in an unskilled or semi-skilled job.

To try to account for the strong influence of having children on women's relationship to employment, the analysis was repeated, including the total number of children a woman had at age 30 - 'none', 'one', and 'two or more' - as an additional control. Although number of children predicted many of the outcomes, when this variable was controlled the relationship between numeracy and these outcomes remained unaffected. So, for example, women with poor numeracy were less likely to be in a full-time job, regardless of the number of children that they had.

Employment-related Women with poor basic skills were unlikely to have received work-related training or to have had the opportunity of promotion, but there were no separately identifiable numeracy effects. The same applied to the likelihood of working for a company that offered maternity leave above statutory levels. On the other hand, women with poor numeracy alone were less likely to work for a company that offered company shares.

Other economic outcomes Women with both poor numeracy and poor literacy were less likely to own their own homes. But poor numeracy, rather than poor literacy, predicted women being part of a non-working household.

Social participation Poor numeracy, regardless of literacy competence, predicted low political interest, and increased likelihood of not voting. Women with poor numeracy were less likely to have voted and more likely to lack any interest in politics. On the other hand, absence of membership of a community or voluntary organisation or the Parent Teacher Association (PTA) was related to poor basic skills generally.

Health and well-being Women with poor numeracy were independently more likely than others to report poor physical health and to believe they lacked control over their lives. However, women with poor basic skills generally were more likely to have experienced depression, to feel overburdened with problems in life and to feel they rarely got what they wanted out of life; i.e. there was no separately identifiable numeracy effect.

Discussion and conclusions

The descriptive analysis pointed to powerful possible effects of numeracy on a number of adult economic, social and psychological outcomes. The logistic regression analysis refined the picture further, identifying different possible effects for men and women.

Men Once all basic skills combinations and highest qualification obtained were taken into account in the analysis, the negative basic skills effect on adult outcomes was clearly apparent only for the combination of poor numeracy and poor literacy, i.e. absence of both skills rather than numeracy alone was what mattered. This applied not only to the labour market outcomes, but to the whole range of economic, social and psychological outcomes that the analysis encompassed with the exception of:

- lack of access to an employer pension scheme - predicted by poor numeracy;
- depression - predicted by poor numeracy; and
- lack of political interest - this time the combination of competent numeracy with poor literacy showed the negative effect, i.e. poor literacy appeared to be the critical factor.

These results suggest that lack of basic skills and poor educational achievement generally is bound up for many men with the economic, social and psychological difficulties that emerge later in life. The picture gained is one of a life course marred by disadvantage and failure relative to others and a far less accommodating world than that enjoyed by previous generations. Poor acquisition of the basic skills plays a part in the process, having both direct and indirect effects (through educational failure) on the later (negative) outcomes, but neither numeracy nor literacy generally takes precedence over the other in accounting for them.

Women For women the picture that emerges is rather different. Once again, the combination of 'poor numeracy and poor literacy' appears most disadvantageous, relating to the widest range of age 30 negative outcomes. But in this case centrality attaches to numeracy. For a high proportion of both the labour market and non-labour market outcomes poor numeracy in combination with competent literacy also showed negative effects. Thus women with poor numeracy regardless of their level of literacy, tended, more than others:

Discussion and conclusions

- to be out of the labour market in a full-time home caring role;
- to live in a non-working household;
- not to vote;
- not to have any political interest;
- to have poor physical health;
- to be depressed; and
- to feel they lacked control over their lives.

It is probable that changes in the nature of employment lie at the heart of the numeracy problem in the sense that modern jobs of the kind to which young women, including early school leavers, are attracted place a high premium on skills to which basic numeracy is central. These jobs range from managing accounts to using ICT equipment in the modern office. The barrier poor numeracy can present for access to such jobs may well therefore be one of the factors in these young women's early exit from the labour market and other signs of subsequent social exclusion.

Numeracy poses particular problems for employability because if numeracy skills are not used in employment they are likely to decline. This is less the case with literacy, where there is constant exposure to written communications. It is not surprising therefore that re-analysis of the International Adult Literacy Survey (IALS) data showed a decline in numeracy with age¹⁷. In addition, earlier analysis based on the 1958 cohort, showed that among poorly skilled men, whose occupation was typically semi-skilled and unskilled, the longer they were out of work the more their numeracy scores declined¹⁸. It seems likely that as women continue to engage more with the labour market, a similar decline in numeracy with unemployment will occur among them as well. This highlights the vicious circle in which a skills deficit that is already impeding access to employment gets worse with lack of use, restricting access even further.

The surprising result is that for both men and women literacy barely features as

¹⁷ Parsons, S., & Bynner, J. (1999): **Literacy, Leaving School and Jobs: the effect of poor basic skills on employment in different age groups**. The Basic Skills Agency: London. ¹⁸ Bynner, J. & Parsons, S (1998): **Use it or Lose it?** The Basic Skills Agency: London.

Discussion and conclusions

having an independent effect on any of the age-30 outcomes. We cannot exclude the possibility that the grouping of literacy scores in constructing the typology may have had something to do with this. The merging of 'very low' and 'low' scores' to build up the numbers in the 'poor' literacy group was necessary to construct the numeracy/literacy typology, but contrasts with the use of only 'very low' scores to identify the 'poor numeracy group. It might be the case that such a grouping for literacy is too crude for the fine-grained discrimination that is needed to identify the problem group. For numeracy where severe difficulties are much more common, the number in the 'poor' group did not need boosting hence the fine-grained discrimination needed was achieved.

Such a restriction in the present investigation will not apply when repeating the analysis with the 2004 BCS70 follow-up containing numeracy and literacy assessments for all c10,000+ participating cohort members with follow-up of adult outcomes to age 34. Our judgement is, however, that the current conclusions are likely to be broadly sustained. Poor numeracy imposes difficulties for functioning in all areas of life and represents a particular problem in the modern world for women. This analysis therefore gives an important pointer for policy. Targeting poor numeracy skills among the most disadvantaged sections of the female population is likely to be a particularly important antidote to the risk of social exclusion.

Appendix

Logistic regression

To make a more robust assessment of the influence of a poor grasp of numeracy and/or literacy on the various outcomes in adulthood, the data was analysed using the statistical technique of logistic regression. This technique involved the estimation of a number of two-category (binary) outcomes at age 30, such as 'in full-time employment at age 30' / 'not in full-time employment at age 30' first in terms of the four combined numeracy and literacy groups. We then took the analysis a step further and estimated the same binary outcomes at age 30 for the four combined numeracy and literacy groups plus a three-category highest qualification achieved measure.

The results are reported as relative odds or odds ratios for each of the three poor skilled numeracy and literacy groups compared with the odds ratio for the competent numeracy and literacy group, defined as the 'reference' category, which in this analysis is set at 1. Odds ratios greater than 1 signify a positive relationship between poor skills and the outcome and odds ratios less than 1 a negative relationship. Thus for the prediction of being in full-time employment status at age 30, we might expect the category 'poor numeracy and poor literacy' to have an odds ratio substantially lower than 1. If an odds ratio of 0.25 for being in full-time employment was found for men in the 'poor numeracy and poor literacy' group it would mean that their chances of being in this status compared with the chances of not being in it were one quarter of those for the men in the 'competent numeracy and competent literacy' group. To assess the statistical significance of the difference between a given odds ratio and 1, two levels of statistical significance are reported: $p < .01$, $p < .05$. $P < .10$ is also reported to indicate the presence of a difference that just fell short of attaining statistical significance¹⁹.

In total the impact of numeracy and literacy was modelled on 15 outcomes in adulthood for men and 18 outcomes in adulthood for women. Table A1 lists the outcomes and the distribution of the overall samples of men and women separately across the two categories of each outcome. Tables A2 (a) and (b) give, for men and women respectively, the odds ratios obtained for membership of each of the four categories of the numeracy and literacy typology with and without inclusion in the analysis of the highest qualification control.

¹⁹ The p-value of $p < .01$ indicates the observed relationship would occur by chance in less than 1 per cent of cases; a p-value of $p < .05$ indicates the observed relationship would occur by chance in less than 5 per cent of cases; a p-value of $p < .10$ indicates the observed relationship would occur by chance in less than 10 per cent of cases.

Appendix

Table A1. Information on each adult outcome

CM = Cohort member

Variable information	Values	Distribution	
		Men	Women
Employment status at 30			
In full-time employment at 30			
Whether CM was in full-time employment at 30	0=other status	9.7%	59.9%
	1=in full-time employment	90.3%	40.1%
In full- or part-time employment at 30			
Whether CM was in full- or part-time employment at 30	0=other status		31.9%
	1=in full-time or part-time employment		68.1%
In full-time home-care position at 30			
Whether CM was in full-time home-care position at 30	0=other status		75.8%
	1=in full-time home-care position		24.2%
Unemployed at 30			
Whether CM was unemployed at 30	0=other status		96.9%
	1=unemployed		3.1%
In semi-skilled or unskilled work at 30			
CM in semi-skilled or unskilled manual work at 30	0=non-manual or skilled manual job	85.0%	83.5%
	1=semi-skilled or unskilled job	15.0%	16.5%
Employment-related experiences			
Work-related training ¹			
CM asked if they had any work-related training in job at 30	0=not received work-related training	43.9%	72.6%
	1=received work-related training	56.1%	27.4%
Promotion opportunities ¹			
CM asked if they had any opportunity for promotion in job at 30	0=no promotion opportunities	63.9%	56.1%
	1=promotion opportunities	36.1%	43.9%
Computer at work ¹			
CM asked if they used a computer at work	0=no		52.5%
	1=yes		47.5%
Current employer offers... ¹			
Paternity leave	0=no paternity leave		68.5%
	1=paternity leave		31.5%
Maternity leave	0=no maternity leave		69.4%
	1=maternity leave		30.6%

Table A1. Information on each adult outcome contd.

CM = Cohort member

Variable information	Values	Distribution	
		Men	Women
Employment-related experiences continued			
Current employer offers			
Company shares ¹	0=no shares	76.9%	78.8%
	1=shares	23.1%	21.2%
Company pension ¹	0=no company pension	44.3%	
	1=pension	55.7%	
Other economic outcomes			
Home owner			
CM asked if they owned or rented their home or had some other arrangement	0=rents, other arrangement	34.3%	35.4%
	1=home owner	65.7%	64.6%
Non-working household			
Information derived from the employment status of CM and their partner (if any) at age 30	0=CM and/or partner in paid work	94.8%	86.8%
	1= CM and partner (if one) not in paid work	5.2%	13.2%
Social participation			
Voting			
CM asked if they had voted in 1997 General Election	0=voted		59.0%
	1=did not vote		41.0%
Political interest			
CM asked if they were 'very', 'fairly', 'not very' or 'not at all' interested in politics	0=very, fairly, not very interested in politics	70.8%	55.9%
	1=not at all interested in politics	29.2%	44.1%
Organisation membership			
CM asked if they had ever been a member of any organisation. This included political, charity/voluntary group, women's groups, townswomen's guild/WI, parent/school organisations, tenants/residents associations	0=never been a member		85.3%
	1=member now/at some time previously		14.7%
Arrested			
CM asked if they ever been arrested and taken to a police station	0=never arrested	69.7%	
	1=arrested	30.3%	

Appendix

Table A1. Information on each adult outcome contd.

CM = Cohort member

Variable information	Values	Distribution	
		Men	Women
Health + well-being			
General health poor at 30			
CM reported if they had been in excellent, competent, fair or poor health in the 12 months prior to interview	0=excellent, competent, fair 1=poor	91.0%	9.0%
Depressed at 30			
CM had their psychological well-being assessed by use of the Malaise Inventory (Rutter et al., 1970). 24 yes/no questions elicited whether feelings of depression were currently being experienced. A 'depressed' score is assigned if 'yes' is answered to 8 or more questions	0=competent 1=depressed	87.1% 12.9%	83.5% 16.5%
Lack of control			
Does CM feel they have control over what happens to them? CM had to choose which statement comes closest to their own view	0=I usually have free choice and control over my life 1=whatever I do has no real effect on what happens to me	91.3% 8.7%	90.2% 9.8%
Dissatisfaction with life			
Does CM get what they want out of life? CM had to choose which statement comes closest to their own view	0=I usually get what I want out of life 1=I never really get what I want out of life	79.3% 20.7%	
Problems in life			
Can CM run life as they want to? CM had to choose which statement comes closest to their own view	0=usually I can run my life more or less as I want to 1=I usually find life's problems just too much for me		93.2% 6.8%
<i>n</i> (100%)		383	401

¹ indicates reduced sample of CMs currently in work at time of interview. Overall reduced sample = 307 (men), 255 (women).

Table A2(a). Predicting adult outcomes for men with poor numeracy and/or literacy

	Num + lit				Num + lit & highest qualification				No quals	CSE/ nvq1	O'level/ nvq2
	pn+pl	pn+cl	cn+pl	cn+cl	pn+pl	pn+cl	cn+pl	cn+cl			
Employment											
FT Employed at 30	0.37*	0.60	1.00	1.00	0.36*	0.60	0.94	1.00	0.90	2.57	1.00
Unemployed at 30	2.74	1.95	0.00	1.00	3.08*	2.21	0.00	1.00	0.50	0.48	1.00
Manual IV or V	2.76*	1.80	1.49	1.00	2.63*	1.63	1.46	1.00	1.91*	1.43	1.00
Employment-related											
Work-related training ¹	0.26*	0.59	0.63	1.00	0.27*	0.62	0.67	1.00	0.72	0.66	1.00
Promotion opportunity ¹	0.33*	0.60	0.70	1.00	0.34*	0.62	0.72	1.00	0.67	0.69	1.00
Use a computer at work ¹	0.19*	0.54*	0.64	1.00	0.20*	0.61	0.70	1.00	0.47*	0.34*	1.00
Company offers...											
Paternity leave ¹	0.29*	0.44*	1.05	1.00	0.30*	0.46	1.10	1.00	0.73	0.60	1.00
Shares ¹	0.45*	0.69	0.85	1.00	0.50	0.76	0.92	1.00	0.46*	0.32*	1.00
Pension scheme ¹	0.57*	0.33*	1.49	1.00	0.60	0.34*	1.65	1.00	0.90	0.39*	1.00
Other economic											
Home owner	0.31*	0.57	0.81	1.00	0.32*	0.58	0.83	1.00	0.90	0.79	1.00
Non-working household	2.80*	2.70	0.66	1.00	2.73*	2.55	0.68	1.00	1.59	0.47	1.00
Social participation											
Little political interest	2.92*	1.72	2.20*	1.00	2.70*	1.52	2.22*	1.00	2.47*	1.58	
Arrested	1.75*	1.84*	0.93	1.00	1.66*	1.72	0.87	1.00	1.53*	1.40	1.00
Health + well-being											
Depressed	2.52*	3.72*	0.25	1.00	2.69*	3.99*	0.26	1.00	0.69	0.67	1.00
Lack of control	2.24*	0.99	1.48	1.00	2.21*	0.96	1.50	1.00	1.29	0.75	1.00
<i>n(100%)</i>	61	42	40	240	61	42	40	240	167	46	170

Key: *p<.01, •p<.05, †p<.1 - numbers in bold are statistically significant at the .05 level or above.

pn = poor numeracy; cn = competent numeracy; pl = poor literacy; cl = competent literacy

¹ indicates reduced sample of CMs currently in work at time of interview.

Overall reduced sample = 307. Reduced sample sizes over the 4 numeracy/literacy groups = 44, 31, 35, 197.

Appendix

Table A2(b). Predicting adult outcomes for women with poor numeracy and/or literacy

	Num + lit				Num + lit & highest qualification						
	pn+pl	pn+cl	cn+pl	cn+cl	pn+pl	pn+cl	cn+pl	cn+cl	No quals	CSE/ nvq1	O'level/ nvq2
Employment											
FT employed at 30	0.25*	0.70	0.84	1.00	0.27*	0.71	0.87	1.00	0.77	0.86	1.00
FT or PT employed at 30	0.31*	0.47*	1.53	1.00	0.34*	0.48*	1.57	1.00	0.66 [†]	1.07	1.00
FT Home-care role at 30	3.28*	1.93*	0.66	1.00	2.99*	1.91*	0.64	1.00	1.54 [†]	0.99	1.00
Manual IV or V job at 30	4.17*	1.58	2.23	1.00	3.05*	1.59	1.94	1.00	3.48*	1.77	
Employment-related											1.00
Work-related training [†]	0.47*	0.81	1.09	1.00	0.53*	0.84	1.15	1.00	0.62 [†]	0.76	1.00
Promotion opportunity [†]	0.45*	0.70	0.94	1.00	0.53 [†]	0.68	1.00	1.00	0.56*	0.84	1.00
Company offers...											
Maternity leave (above statutory leave) [†]	0.49 [†]	0.52	0.73	1.00	0.51 [†]	0.51	0.74	1.00	0.83	1.24	
Shares [†]	0.58	0.32*	0.85	1.00	0.54	0.32*	0.83	1.00	1.22	1.11	1.00
Other economic											1.00
Home owner	0.51*	0.60	1.05	1.00	0.59*	0.63	1.13	1.00	0.64 [†]	0.53 [†]	1.00
Non-working household	3.86*	2.90*	0.62	1.00	3.58*	2.84*	0.60	1.00	1.31	1.27	
Social participation											1.00
Not voting in 1997	1.78*	2.19*	1.21	1.00	1.63 [†]	2.16*	1.18	1.00	1.43	1.09	1.00
Little political interest	2.53*	1.85*	1.39	1.00	2.09*	1.80*	1.30	1.00	2.35*	1.28	
Ever a member of any organisation	0.45*	0.61	0.73	1.00	0.52*	0.63	0.78	1.00	0.61	0.65	
Ever a member of a PTA	0.20*	0.54	0.73	1.00	0.20*	0.54	0.73	1.00	0.87	1.15	1.00
Health + well-being											
Poor physical health	2.94*	2.23 [†]	0.39	1.00	2.76*	2.20 [†]	0.38	1.00	1.31	1.04	1.00
Depressed	2.67*	1.53	0.78	1.00	2.60*	1.53	0.77	1.00	1.16	0.91	1.00
Usually get what want	0.55*	0.93	1.07	1.00	0.63	0.96	1.13	1.00	0.58*	0.79	1.00
Lack of control	4.97*	3.52*	2.43	1.00	4.43*	3.49*	2.39	1.00	1.83	0.76	1.00
Problems with life	5.30*	1.09	0.65	1.00	5.07*	1.11	0.66	1.00	1.81	0.00	1.00
<i>n(100%)</i>	97	74	42	188	97	74	42	188	163	44	194

Key: *p<.01, *p<.05, *p<.1 - numbers in bold are statistically significant at the .05 level or above.

pn = poor numeracy; cn = competent numeracy; pl = poor literacy; cl = competent literacy

[†] indicates reduced sample of female CMs currently in work at time of interview.

Overall reduced sample = 255. Reduced sample sizes over the 4 numeracy/literacy groups = 48, 40, 35, 132.

DOES NUMERACY MATTER MORE?
SAMANTHA PARSONS AND JOHN BYNNER



This report is funded by the Department for Education and Skills as part of *Skills for Life*: the national strategy for improving adult literacy and numeracy skills. The views expressed are those of the author(s) and do not necessarily reflect those of the Department.

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NRDC is a consortium of partners led by the Institute of Education, University of London with:

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- National Institute of Adult Continuing Education
- King's College London
- University of Leeds

Funded by the Department for Education and Skills as part of *Skills for Life*: the national strategy for improving adult literacy and numeracy skills.