

## Key findings from the National Child Development Study



Now we are  
**50**



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# Now we are 50

Key findings from the National Child Development Study

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# Foreword

Polly Toynbee

The National Child Development Study (NCDS), which is following the lives of around 17,000 people born in Britain in 1958, is one of the crown jewels of social research. Nothing comes close in value to the mighty British longitudinal surveys that track cohorts of babies, observing almost everything that happens from cradle to grave.

1946, 1958, 1970 and 2000 are dates engraved on the minds of all British social and health scientists, since so much of the best research emerges from delving back into these cohort studies to look for causes and effects that often the early devisers may not themselves have considered. Well over a thousand separate pieces of research have used the NCDS and many more will follow, perhaps for ever as future researchers return again and again to look for clues and answers to new questions as they arise.

All the great social issues of our time may be unravelled here. What counts more, nature or nurture? Why do some children have resilience to bad beginnings that other children lack? Which early or later factors are most vital to a person's long-term health and happiness? As governments spend fortunes trying to improve the nation's health and education, here is the raw material to discover where the state needs to invest to be most effective.

This report marks the fiftieth birthday of the 17,000 NCDS babies born in one week in the spring of 1958. Researchers have been able to keep in contact with approximately 12,000 of them, doing follow-up surveys every few years. The most pressing political and social questions are revealed in the stories of their lives so far.

High on the political agenda is social mobility. How far did they climb or fall back from the social status of their parents? Politicians now wrangle over what seems to be stalled social mobility. Why did these children born in 1958 rise further and faster than the children born only 12 years later in the 1970 cohort? What stopped that onward social progress?

Politically, whose babies are they anyway? Labour says 1970 babies suffered from moving to secondary school in Mrs Thatcher's early 1980s recession. Conservatives claim their 1958 babies thrived better than those born into the Labour-governed Britain of 1970.

But sociologists looking deeper may find no such glib reasons from evidence in these studies. One famously counter-intuitive finding from these studies shows how the growth in higher education benefited the higher social classes far more than the rest, increasing the social divide.



The comparison between the fates of 1958 and 1970 children offers a remarkable chronicle of social change in a short time. These are not the hazardously false memories and dubious reporting of social observers and autobiographers on whom we have to rely for pictures of everyday life from earlier eras. Here are irrefutable statistics.

The 1970 children stayed young longer, married later. In their early thirties, one in five was single compared with only one in eight of the generation 12 years older. Families were less likely to eat together, and twice as many men did the household cleaning (though only up from 2.4% to 4.9%). A third of 1958 women were full-time housewives in their early thirties, but for women born 12 years later, that dropped to a fifth.

For governments, this gold mine of evidence has delivered policy riches. The NCDS proved beyond doubt that mothers who smoked heavily during pregnancy harmed the health and reduced the weight and height of their children, continuing on to damage English and maths scores at 16 years old.

Politicians are impatient, and may not make as much use of the collected data here as they should before devising new policies on everything from juvenile crime to housing and childcare. Not all the findings are encouraging: the impact of government health information campaigns has been monitored carefully, but

researchers conclude that changing lifestyle, eating and exercise habits is exceedingly hard. Beyond that, here are lives set against the history of their times.

Researchers bitterly regret the gaping thirty-year hole in the data, as the money was not found for the study of a new cohort between 1970 and 2000. The Economic and Social Research Council is seeking to maintain and enhance this invaluable body of studies but it is a costly business.

But it's worth every penny, for this is not just utilitarian policy-making data, but invaluable social history with all the missing details of ordinary lives we yearn to know about other bygone ages. If only there was a cohort study of children born in 1066 or 1649 or 1832. The doings of royalty and the powerful are recorded, but only slim pickings remain about the way most people lived and thought.

These studies are unique in the world, the envy of social researchers who flock to use the high quality data collected here, but nowhere else.

Social science is something Britain is extraordinarily good at – and it can reveal the secrets of human life and society that people most want and need to know.





# Introduction and summary

**Romesh Vaitilingam**

The National Child Development Study (NCDS) has been following the lives of around 17,000 people born in Britain during one week in 1958. The members of this cohort, who turn fifty this year, have been surveyed from birth, through their childhood and adolescence, and into adult life. The intention is to track their physical, educational, social and economic progress 'from the cradle to the grave'.

The information gathered in the NCDS surveys includes details of the cohort members' families, employment, income, housing, health, skills and qualifications, and views and expectations. These data have provided a unique opportunity for social and medical researchers to study the long-term consequences of early childhood experience and the factors that reinforce positive and negative developments in people's lives.

Through comparisons of the 1958 cohort with earlier and later birth cohorts (notably those born in 1946 and 1970), it has also been possible to gain a deeper understanding of the impact of a half-century of change in British society. And key findings from the NCDS have had a significant impact on policy-making and service provision across a wide range of areas – from education and employment to housing and health.

## Health

The first survey of the 1958 cohort provided some of the earliest insights into the impact of maternal smoking during pregnancy. It also informed debate about the best place to deliver babies, indicating that mothers should only opt for home births when very early transfer to hospital is possible at the first sign of need and where highly experienced midwives and doctors are available.

Continuing research on the cohort has shed light on the development of physical and emotional health throughout childhood, and subsequent links with adult health. It has also highlighted the

impact of several key health-related behaviours, including smoking, physical activity, dietary habits and alcohol consumption.

More recently, cohort members' DNA has been used to examine possible links between people's genes and common diseases such as diabetes and rheumatoid arthritis. This research has also produced important breakthroughs.

## Education and skills

The 1958 cohort grew up at a time of considerable change in education. The 'eleven-plus' was being abolished, and the comprehensive sector was becoming established. The cohort members were the first group of teenagers to have to stay on at school to 16. Many of them benefited from the expansion of the university system in the late 1960s. Yet nearly two thirds of them left school at 16, just as pressure from employers for a better skilled workforce was beginning to grow.

Research using the NCDS has informed a range of important issues in educational policy. It has shown the wage returns to different qualifications, notably the high value of higher education. And in revealing the negative consequences of poor basic skills, it has influenced both policy and practice. Many cohort members have made good the deficiencies in their educational experiences by pursuing qualifications in later life.

## Family life

Among the most notable social trends since the late 1950s have been the decline in marriage, the rise in cohabitation and the increase in divorce and separation. These changes in family life have fuelled public debates and raised policy concerns about their implications for the lives of children and parents, and society more generally. Research using the NCDS has been invaluable in contributing to knowledge of these matters.



For example, it is now clearly established that far from being a single event in children's lives, divorce is a process that can begin years before their parents separate and has repercussions that reverberate through childhood and into adulthood. Children from disrupted families tend to do less well in school and subsequent careers than their peers. They are also more likely to experience the break-up of their own partnerships.

### Gender and the workplace

In the mid-1970s, when the 1958 cohort was leaving school, the labour market was undergoing massive change. Traditional industries like coal and steel were in steep decline. The service sector was expanding. And alongside a series of major legislative changes to tackle gender inequalities, there was a steady rise in women's labour market participation and part-time work.

The NCDS has provided valuable information about the different work histories of men and women and how they relate to differences in pay, as well as revealing some of the factors underpinning continued gender inequalities. It has also helped to inform policy-making, providing evidence to official commissions concerned with pensions and equal pay, and contributing to recent debates about extending maternity and paternity leave.

### Inequality and life chances

Over the past fifty years, there has been an enormous increase in the standard of living that the British population enjoys. At the same time, there has been a substantial rise in inequality. Comparisons between the 1958 cohort and those born in 1970 also suggest that inequality is becoming more embedded in society, as individuals' life chances are becoming more, not less, shaped by their class origins.

The 1958 cohort provided some of the earliest evidence of the significance of family background for children's educational attainment. Later research has confirmed that the early results for education were showing crucial differences that had a substantial effect on children's life chances. These findings have become accepted in policy circles and have helped to shape thinking on social exclusion and social mobility.

### The future

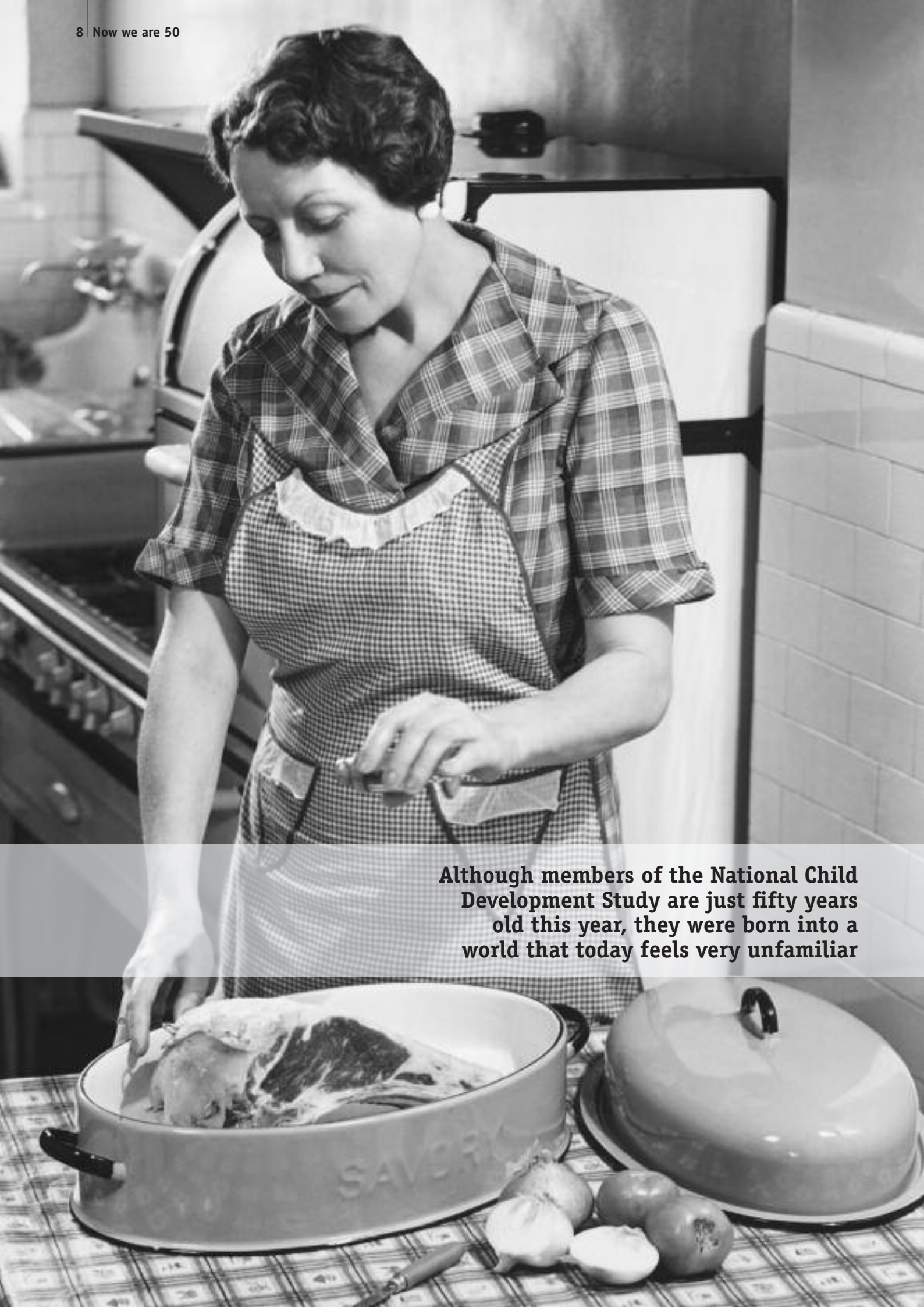
As they turn fifty, the 1958 cohort members are a very diverse group: while some, often those disadvantaged in childhood, have had poor outcomes in education, health and the labour market, others, who perhaps delayed making long-term family commitments and stayed on in education, reaped benefits. Evidence from other longitudinal studies indicates that such diversity of experience will only become more marked as the cohort ages.

Many formative lifecourse events have happened by the time people reach their fifties, and choices about education, training, health behaviours, family formation and employment have been made. But it is only from the fifties onwards that the full consequences of these past choices will emerge.

The raw ingredient of good social policy analysis is an understanding of the interlinked nature of economic, social, family and health outcomes and the distinction between the causes and consequences of lifecourse events in these domains. Ageing begins at birth and so the 1958 cohort and the other cohort studies are crucial because they provide direct observations taken over the entire lifecourse. The scientific value of the data will be huge as the cohort members move into and through their retirement.

Romesh Vaitilingam  
July 2008





**Although members of the National Child Development Study are just fifty years old this year, they were born into a world that today feels very unfamiliar**



# 1: Fifty years of change in British society

Jane Elliott

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Although members of the National Child Development Study (NCDS) are just fifty years old this year, they were born into a world that today feels very unfamiliar. Food rationing had finally ended in 1954, but in 1956 fewer than one in ten households had refrigerators and only a minority had a telephone.

1958 was the year that Bertrand Russell launched the Campaign for Nuclear Disarmament, Nikita Khrushchev became Soviet premier and the first successful American satellite, Explorer 1, was launched. Over the next fifty years, those born in 1958 were to witness dramatic events on the world stage as well as thoroughgoing changes in family life, education, gender roles and employment. Technological change was to transform communications as well as people's experiences of work.

This chapter outlines some of the key changes in British society that have taken place over the last fifty years. It draws on the growing body of historical work documenting the second half of the twentieth century, together with official statistics and the NCDS itself. The aim is to provide a descriptive background to the chapters that follow, each of which focuses on the contribution made by the NCDS to our understanding of a particular area of life.

## School and education

People born in 1958 were educated during a period when there was considerable debate about the nature of primary schooling (Plowden, 1967). There were also significant changes in secondary schooling: selection – the 'eleven-plus' – was in the process of being abolished, and the comprehensive sector was expanding.

When the 1958 cohort was surveyed in 1965, the average class size for these 7 year olds was 37 and nearly four in five pupils

were in classes of more than 30. By the time the cohort members were aged 11, the average class size had dropped to 34.5 but still three quarters of them were in classes of more than 30. In 1998, just one in five children in infant classes in England and Wales was in a class of more than 30.

The school leaving age was raised from 15 to 16 years in 1973, making cohort members part of the first year group required to stay on at school for an extra year. A substantial proportion of the cohort left school at age 16 (66% of men and 60% of women), figures that are much higher than we would expect today.

But the 1958 cohort benefited from the large expansion of the university system that took place in the late 1960s following a report on the future of higher education commissioned by the government (Robbins, 1963). By age 33, 14% of men and 11% of women in the cohort reported having a degree. A considerable body of research has focused on the school experiences, educational outcomes and returns to education for this cohort (see chapter 5).

## The making of an affluent society

When Harold Macmillan famously said that 'Most of our people have never had it so good' in 1957, he could not possibly have foreseen the enormous increase in the standard of living that the population would be enjoying over the next fifty years. As Figure 1.1 shows, between 1974 (when the cohort members turned 16) and 2004, household disposable income more than doubled in real terms. And although during the 1970s and early 1980s, household income growth was slightly erratic, from 1983 onwards, growth has been steady (Office for National Statistics (ONS), 2005).

**In the late 1950s, fewer than one in ten households had refrigerators, less than a third had regular use of a car and only a minority had a telephone**

This has led to a marked change in lifestyles with more people owning consumer durables and an increase in foreign holidays and travel. For example, during the 1970s, the proportion of households with a telephone doubled – from 35% in 1970 to 72% in 1980 – and by 2002/3, 94% of households had a telephone and 70% a mobile phone.

The proportion of households with cars has also increased substantially. In 1961, only 31% of households had regular use of one or more cars. This rose to 52% in 1971 and 74% in 2001 (ONS, 2005). Air travel has increased dramatically since the early 1970s: the number of air passengers in 2003 was almost six times the number in 1971.

Rapid technological change has also transformed people's lives since the late 1950s. The 1958 cohort members were still using slide rules during their school days. Now, calculators and computers are commonplace in schools as well as at home and in the workplace.

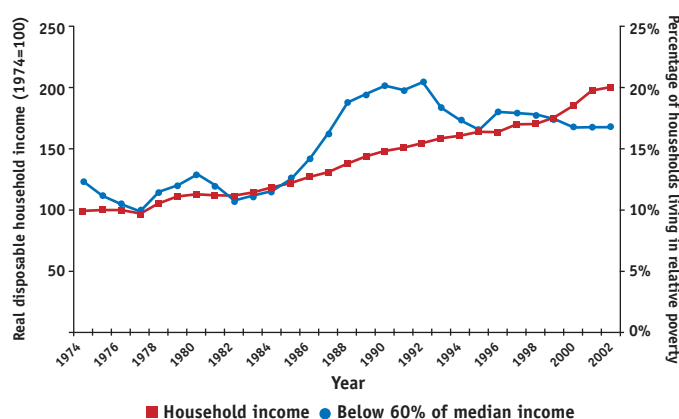
The first personal computer was released commercially at the end of 1974. In 1985, 13% of homes had a computer; by 2002, this had increased to 55%. The worldwide web was invented in 1989, and while ten years later, just one in ten households had access to the internet from home, this had risen to 45% by 2002/3. When the cohort members were interviewed in 2004/5, 87% reported that they had a computer at home and 68% said they used it to access email or the internet.

Greater affluence has brought with it declining physical activity levels because of the longer hours spent watching television, increased use of motorised transport and a decline in walking and cycling. This in turn has led to concerns about the increase in obesity and associated diseases such as type 2 diabetes and cardiovascular disease.

## Housing

The early years of the 1958 cohort were very different from preceding generations in terms of their housing experience. Improvements in both the quality and supply of housing after the Second World War meant that unsatisfactory accommodation was

**Figure 1.1: Real disposable household income and percentage of households below 60% of median income over time**



much less common than it had been among earlier cohorts. For example, whereas one in five of those born in 1946 had no bathroom at age 15, this was true for only one in fifty of the 1958 cohort at age 16 (Ferri and Smith, 2003).

The post-war boom in house building led to a major shift in tenure patterns. Over the lifetime of the 1958 cohort, owner occupation has increased substantially and we have very nearly become 'a nation of home-owners'.

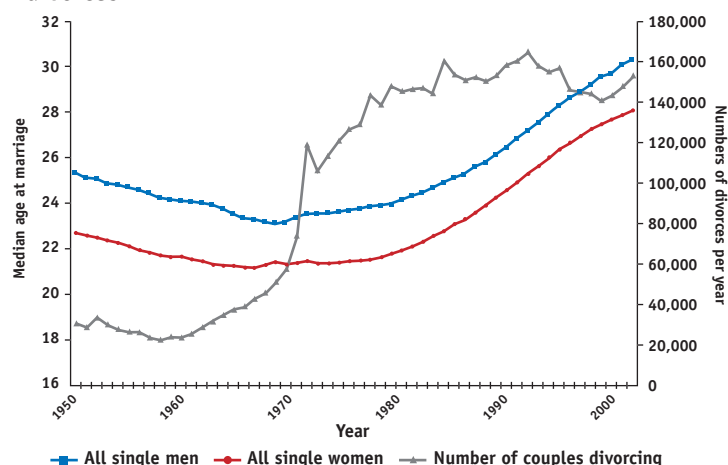
Initially, during the 1960s and 1970s, private renting fell while owner occupation and renting from local authorities increased. The Housing Acts of 1980 and 1985 gave new rights to council tenants, most importantly that those with more than two years' standing could buy their house or flat at a discount. By the end of 1987, 1.1 million council, housing association and new town homes had been purchased in this way.

The rise in owner occupation continued in the 1990s. In 1981, 58% of dwellings were owner-occupied; by 2003, this had risen to 70% (ONS, 2005). In 1969, just 46% of cohort children lived in owner-occupied accommodation with 42% living in homes rented from the council and 8% in private rented accommodation. By 2004, approximately 86% of cohort members were living in owner-occupied accommodation.



**The 1958 cohort members were still using slide rules during their school days – now, calculators and computers are commonplace at school, at home and in the workplace**

**Figure 1.2: Trends in age at marriage and numbers of divorces**



## Inequality and mobility

Accompanying the improvements in standards of living and disposable income, the past fifty years have seen a substantial rise in inequality. After a period of relative stability during the 1960s and 1970s, the increase in income inequality was unprecedented under the Conservative government during the 1980s. Inequality has continued to rise since the early 1990s but at a slower rate (Clark and Goodman, 2001).

The increases in inequality meant that the numbers living in relative poverty (measured as the proportion of people in households receiving less than 60% of median income) approximately doubled between the late 1970s and the early 1990s (see Figure 1.1).

Research using data from the 1958 cohort has highlighted the importance of economic circumstances in early childhood both for healthy growth and development and also for economic prosperity in later life. Together with other studies of the consequences of economic disadvantage, these findings fuelled government concerns and led in 1999 to the Labour government's pledge that by 2010, the number of children living in poverty would be halved.

As the 1958 cohort grows older and new data are collected, it will be possible to test whether growing up in poverty also has implications for inequalities in cardiovascular and respiratory disease in old age.

Inequality has clearly increased over the past fifty years but there are also indications that social mobility is declining. Comparisons between the 1958 cohort and those born in 1970 suggest that individuals' life chances are becoming more, not less, shaped by their class origins (see chapter 6).

## Marriage and cohabitation – the decline of the family?

Over the last five decades, a major theme of social policy and commentary has been the breakdown of traditional family structures. In particular, there have been concerns about the demise of the traditional 'nuclear' family, resulting from the decline in marriage, the rise in cohabitation and the increase in divorce and separation.

Figure 1.2 charts trends in the median age at which men and women first get married in England and Wales. From the 1950s until around 1970, there was a trend towards *earlier* marriage for both men and women with an increase in marriage rates for



**Over the past fifty years, there has been an enormous increase in the standard of living that the population enjoys – but also a substantial rise in inequality**



people under 25 and relatively stable marriage rates among older age groups (Elliott, 1991). In 1951, the median age at first marriage was 26.8 years for men and 24.6 for women; by 1971, these figures had dropped to 24.6 and 22.6 respectively.

But from 1972 onwards, this trend reversed so that by 1991, the median age at first marriage had risen to 26.5 for men and 24.6 for women, and by 2005, it had risen to 30.7 years for men and 28.5 years for women.

One of the reasons for the decline or postponement of marriage is the increase in cohabitation. From the early 1970s onwards, a growing number of couples have chosen to live together without getting married (Ermisch and Francesconi, 2000a; Haskey, 2001; Kiernan, 2001; Murphy, 2000). While cohabitation was once the domain of previously married couples, it is now the most common form of first partnership among young people, adopted by around three quarters of men and women entering their first partnership in the early 1990s.

Not only has the incidence of cohabitation increased, but couples are also cohabiting for longer. This may signal a change in the nature of cohabitation, with it being viewed as an alternative rather than a prelude to marriage. The idea that marriage is being replaced by cohabitation is supported by the rise in childbearing among cohabiting couples. By 2006, over 40% of all births were to unmarried women but almost two thirds (63%) of these extra-marital births in England and Wales were registered by parents living at the same address (ONS, 2008).

It is not clear what has been driving these trends. Some research shows that attitudes to pre-marital sex have become more liberal over time both within and across cohorts, but the direction of influence between attitude and practice may not be one way (Scott, 1999). Others have argued that the dramatic increases in cohabitation were initially led by innovators among students and graduates in the 1970s, but have gradually spread across all social groups (Ermisch, 2005).

There is now evidence that the original link between higher education (or higher social class) and cohabitation has been eliminated (Ermisch and Francesconi, 2000b). Indeed, there is evidence that it may have reversed (McRae, 1999). This may be a consequence of the deterioration in labour market opportunities for the least skilled men, making them less attractive long-term partners for women, who themselves have made substantial gains in education and employment. Certainly, by the time of the Millennium Cohort Study's first survey in 2000/1, the quarter of all mothers who were cohabiting tended to be younger and less advantaged than married mothers (Kiernan, 2004).

### Divorce

Another factor leading to the supposed decline of the family has been the increase in the divorce rate. As Figure 1.2 shows, the incidence of divorce in England and Wales increased substantially between 1960 and 1980. From a yearly rate of only two divorces per 1,000 married couples in 1960, the divorce rate increased six-fold to 12 per 1,000 married couples in 1980. Although the increase was quite slow during the early 1960s, it was much more rapid during the 1970s (Elliott, 1991).

In 1969, the Divorce Reform Act made legal divorce easier to obtain by allowing either partner to petition for divorce on the grounds that the marriage had irretrievably broken down. While some commentators suggest that this relaxation of the divorce law helped to boost the numbers divorcing, another interpretation is that the Act was a clear response to the increase in the divorce rate during the 1960s and the fact that the courts were overwhelmed by couples wanting to get divorced.

Since the early 1980s, the divorce rate has stabilised: it was 13.7 per 1,000 married couples in 1995 and 13.1 per 1,000 in 2005. This new stability is largely due to the decline in marriage and the increasing proportion of couples cohabiting, particularly since 1990. In the last two decades, attention has therefore turned to the proportion of cohabiting couples with children who subsequently separate.

**Some of the most notable social trends since the late 1950s have been the decline in marriage, the rise in cohabitation and the increase in divorce and separation**

### Gender and employment

There have also been enormous changes over the lifetime of the 1958 cohort in women's experiences, particularly in education and employment. Cohort members would have been too young to read classics such as *The Feminine Mystique* and *The Female Eunuch* when they were first published (Friedan, 1963; Greer, 1970). But cohort members' later childhoods and adolescence would have been shaped, at least in part, by the influence of 'second wave' feminism and the renewed awareness of gender inequalities that developed during the 1960s and 1970s.

During the 1950s, equal pay for men and women in the civil service was established, but women in other occupational groups were expected to accept lower wages simply because of their sex. Gender equality was finally put on the statute book in the mid-1970s just after the cohort members were leaving school.

The Equal Pay Act came into force in 1975 around the same time that the Sex Discrimination Act of 1975 outlawed discrimination in the recruitment and promotion of single and married women in employment. The Employment Protection Act of 1975 introduced statutory maternity leave and pay and the 1975 Pensions Act phased out the option for married women with their own earnings to rely on their husbands' pension contributions.

Despite this legislation, there are still marked differences between men and women's experiences of employment and family life. The NCDS has provided valuable information not just about men and women's different work histories and how these relate to differences in pay, but also about some of the factors underpinning these continued gender inequalities (see chapter 8).

### Examined lives: the growth in social surveys and statistics

A final significant change over the past fifty years is one of which few are likely to be directly aware: the huge increase in information about individuals and society available from large-scale social surveys. Since 1958, three major new birth cohort studies have been set up: the 1970 British Cohort Study; the Avon Longitudinal Study of Parents and Children (based on babies born in what was then the county of Avon in 1992/3); and the Millennium Cohort Study.

In addition, repeated cross-sectional studies – such as the General Household Survey, set up in 1971; the British Social Attitudes Survey, set up in 1983; and the British Crime Survey, set up in 1982 – provide valuable snapshots of social change. And panel studies – such as the British Household Panel Survey, set up in 1991, and Understanding Society, the UK's new longitudinal household study – aim to further our understanding of social and economic change at the individual and household level, while the English Longitudinal Study of Ageing specifically focuses on those aged fifty and over (see chapter 10).

The majority of the data from these studies are available to researchers via the Data Archive at the University of Essex. Increased computing power, coupled with the development of new statistical modelling techniques, mean that resources are available to develop sophisticated descriptions and understandings of the social processes that help shape individual lives. The challenge is to ensure that future policy-making is firmly rooted in this rich base of evidence so that these examined lives become more worth living.

## 2: The history of the National Child Development Study

**Peter Shepherd**

**Centre for Longitudinal Studies, Institute of Education, University of London**

The National Child Development Study (NCDS) is a continuing study that has been following the lives of around 17,000 people born in Britain during one week in 1958. This chapter outlines the origins and development of the NCDS.

Britain has a unique tradition in conducting longitudinal birth cohort studies. Today, there are four such continuing studies, the NCDS; the National Survey of Health and Development and the 1970 British Cohort Study, based on births in Britain during one week in 1946 and 1970 respectively; and the Millennium Cohort Study, based on births over one year beginning in 2000 (Douglas, 1964; Wadsworth, 1991; Chamberlain et al, 1975, 1978; Osborn et al, 1984; Bynner et al, 1997; Dex and Joshi, 2005).

Both individually and in combination, these studies present an unprecedented opportunity to investigate the forces and patterns that have shaped and continue to shape the lives of four generations of people in this country.

### Origins

The NCDS has its origins in the Perinatal Mortality Survey. Sponsored by the National Birthday Trust Fund, this birth survey was designed to examine the social and obstetric factors associated with stillbirth and death in early infancy. (At that time, the perinatal mortality rate – the proportion of babies who were either stillborn or died within seven days of birth – was 33 per 1,000 births.) To this end, the study successfully obtained information on 98% of the more than 17,000 children born in one week in 1958.

Twelve years previously, in 1946, a similar survey had also studied all children born in one week, and it has subsequently followed up about a third of the sample at regular intervals (Douglas, 1964; Wadsworth, 1991). The success of this study prompted considerable interest in the possibility of following up the 1958 cohort.

Strong representations from Dr Mia Kellmer Pringle, director of the National Children's Bureau, Professor Neville Butler, an eminent paediatrician, and Professor WD Wall, then director of the National Foundation for Educational Research, were made to the Plowden committee, which had been commissioned by the government to look into primary education.

Following this, in 1964, the Department of Education and Science agreed to commission the National Children's Bureau to collect information on all these children when they were aged 7. This follow-up survey of all the surviving children became known as the NCDS, and the first major publication on the findings appeared as an appendix to the Plowden committee's report (Pringle et al, 1966).

Further details on the Perinatal Mortality Survey and of the insights into infant and child health provided by this and follow-up surveys are in chapter 4.

### Becoming longitudinal

Since the 1958 cohort was born, there have been seven attempts to trace members of the original study to monitor their physical, educational and social development. These were carried out by the National Children's Bureau in 1965, when the cohort members were aged 7, in 1969 at age 11, in 1974 at age 16 and in 1981 at age 23; by the Social Statistics Research Unit at City University in 1991 at age 33; and by the Centre for Longitudinal Studies in 2000 at age 42 and 2004 at age 46 (Pringle et al, 1966; Davie et al, 1972; Wedge, 1969; Fogelman, 1976; 1983; Ferri, 1993; Power and Elliott, 2006).

The birth cohort was augmented by including immigrants born in the relevant week in the target sample for the first three follow-ups. These were identified from school registers. Since 1974, no attempt has been made to include new immigrants in the survey.


In 1978, contact was made with the schools attended by cohort members at the time of the third follow-up in 1974 to obtain details of public examination entry and performance. Similar details were also sought from sixth form and further education colleges where these were identified by schools.

A biomedical survey of the cohort was undertaken in 2002-4 when cohort members were aged 44-45 (Power and Elliott, 2006; Power et al, 2007; Strachan et al, 2007).

### Collecting the data

The sources and methods of data collection for each survey are summarised in Table 2.1. For the birth survey, data were collected with the help of health authorities across the country, which





**The members of the 1958 cohort have been surveyed in their childhood and adolescence, and continuing through adulthood – ‘from the cradle to the grave’**

## Since the 1958 cohort was born, there have been seven attempts to trace members of the original study to monitor their physical, educational and social development

distributed, retrieved and returned questionnaires. A questionnaire was completed by the midwife in attendance at delivery, with reference to all available records and an interview with the mother.

The information recorded includes the outcome of the birth, including the sex and weight of the child; details of social and family background; past obstetric history, antenatal care and abnormalities during pregnancy, details of labour, analgesia and anaesthesia. For stillbirths or neonatal deaths, this information was supplemented with a clinical summary by the midwife and medical attendants (Butler and Bonham, 1963; Butler and Alberman, 1969).

For the first three NCDS surveys (at ages 7, 11 and 16), data were similarly gathered with the help of local authorities and health authorities. Information was obtained from parents (who were interviewed by health visitors); head teachers and class teachers (who completed questionnaires); the schools health service (which carried out medical examinations); and the cohort members themselves (who completed assessments of ability and questionnaires).

The information gathered includes family situation; parental employment; financial circumstances; health; cognitive and behavioural development; school; and views and expectations (Davie et al, 1972; Wedge, 1969; Fogelman, 1976, 1983). During the collection of examination data in 1978, information was obtained from the schools and colleges by postal survey.

The 1981 survey differs in that information was obtained from the cohort members by professional survey research interviewers, and from the 1971 and 1981 censuses – from which variables describing area of residence were taken. Similarly, the 1991 survey also relied on survey research interviewers to collect information from cohort members. Self-completion questionnaires were also used to gather data from cohort members and from spouses and cohabiting partners.

In addition, for a random sample of one in three cohort members, information was collected for all natural or adopted children who were living with them. Data were gathered from the children themselves and from their mother (who might be the cohort member or their spouse or partner), using a series of age-specific assessments of cognitive and behavioural development. These were supplemented by interviewer observations of mother-child interaction.

For the 2000 survey, information was gathered from cohort members by interview and by self-completion. A survey of the 1970 British Cohort Study was carried out at the same time, using almost identical instrumentation. Both surveys made use of 'computer-assisted personal interviewing' and 'computer-assisted self interviewing' for the first time. In 2004, the survey was carried out for the first time by telephone.

Information routinely gathered during the adult surveys includes details of family; employment; income; housing; health and health-related behaviour; courses and qualifications; views and expectations; and basic skills.

The biomedical survey in 2002-4 was carried out in collaboration with the Institute of Child Health, St George's Hospital Medical School, the National Centre for Social Research and medical and health researchers from a number of other institutions. The primary objective was to examine how developmental, lifestyle and environmental factors act throughout the lifespan to influence current ill health, and physiological and psychological function in early middle age.

Nurse-interviewers carried out a number of biomedical measurements, including near, distance and stereo vision; hearing; lung function; blood pressure and pulse, height and weight; and waist and hip measurements. A short mental health interview was also administered, and samples of blood and saliva were taken.

More than nine in ten of the cohort members who participated in this survey agreed to provide blood samples and the majority also agreed to the extraction of DNA from the samples and to the creation of immortal cell-lines. This material has been anonymised and is already providing an important new resource for genetic research (Power and Elliott, 2006; Power et al, 2007; Strachan et al, 2007).

The overall strategy adopted for the NCDS since 1965 has involved surveys of the entire cohort and, in the intervening years, *ad hoc* studies of groups that are of particular interest. These have required the collection of additional information for a number of sub-samples identified from information gathered during the major surveys.

They include studies of children in care (Mapstone, 1969); adopted children (Seglow et al, 1972); gifted children (Hitchfield, 1974); the children of one-parent families (Ferri and Robinson, 1976; Lambert, 1978); disabled school leavers (Walker, 1982); and those suffering from epilepsy (Ross et al, 1980).

## Information gathered in the surveys includes details of family, employment, income, housing, health, qualifications, views and expectations, and basic skills

### Keeping in touch

A requirement for any successful longitudinal study is the ability to find the cohort members when data are to be collected. Until 1981, no consistent attempt was made to maintain contact with cohort members between surveys – they were traced anew for each follow-up. The response rates for the first three follow-up surveys suggest that this strategy was reasonably successful. It was based on contacting all schools to establish which pupils were born in the survey week.

For the fourth and subsequent surveys in adult life, tracing could not be carried out through schools. Considerable efforts have, therefore, been made to maintain contact with the cohort members. This has been done mainly through the annual mailing of a birthday card to all those with a known address.

Table 2.1 shows details of responses to the birth survey and later NCDS surveys. The overall response has remained encouragingly high, but the number of emigrations, deaths and 'refusals' inevitably grows over time. Emigrations currently stand at 1,306 and deaths at 1,245.

The proportion of cohort members refusing to participate at each follow-up survey remains very small at only around 5%. But while the overall response rates are very good, any element of non-response could introduce problems of bias. One advantage of longitudinal studies is that because those missed at one stage will have provided data at earlier stages, it is possible to check for response bias by comparing the attained sample at any survey to the target sample.

When such analyses have been carried out for the NCDS, the results have been generally reassuring. Differences are generally small or non-existent in relation to such indicators as social class, region, attainment test scores and measures of physical development. But there is evidence of slight under-representation of those who might broadly be termed 'disadvantaged' in relation to family, housing and financial circumstances (Goldstein, 1976; Fogelman, 1983; Shepherd, 1993; Plewis et al, 2004).

### Plans for the future

Since the NCDS grew out of the birth survey, it has always been intended that the 1958 cohort should be followed through childhood and adolescence into adulthood and through adult life – a survey 'from the cradle to the grave'. It is arguable that the benefits, in terms of increased knowledge, multiply with

successive follow-ups. Development does not end at some arbitrary point in childhood, adolescence or adulthood but continues through life.

Since 1991, the future of the NCDS has been planned alongside that of the 1970 British Cohort Study. This integrated approach, first implemented in surveys of both studies in 2000, will maximise the comparability between the two.

The next surveys are taking place in 2008: for the NCDS, this will be a face-to-face interview, and for the 1970 cohort, a telephone interview.

This will provide the social science and medical community with a unique set of data, comprising information about the lives of over 30,000 individuals, their parents, partners and children, with which to trace not just individual development over time but also changes across cohorts over time.

**Table 2.1: NCDS follow-ups and sources of information 1958-2004**

#### All living in Britain born in one week in 1958

PMS <sup>a</sup> (1958) Birth	NCDS1 (1965) 7	NCDS2 (1969) 11	NCDS3 (1974) 16	NCDS4 (1981) 23	NCDS5 (1991) 33	NCDS6 (2000) 42	NCDS7 (2004) 46
17,733 <sup>b</sup>	16,883	16,835	16,915	16,457	15,600	15,145	11,739
Mother	Parents	Parents	Parents				
	School	School	School				
	Tests	Tests	Tests				
Medical	Medical	Medical	Medical				
	Cohort member	Cohort member	Cohort member	Cohort member	Cohort member	Cohort member	Cohort member
			Census	Census			
					Spouse/ Partner		
					Mother <sup>c</sup>		
					Children		
17,414 <sup>d</sup>	15,568	15,503	14,761	12,537	11,407	11,419	9,534

#### Notes:

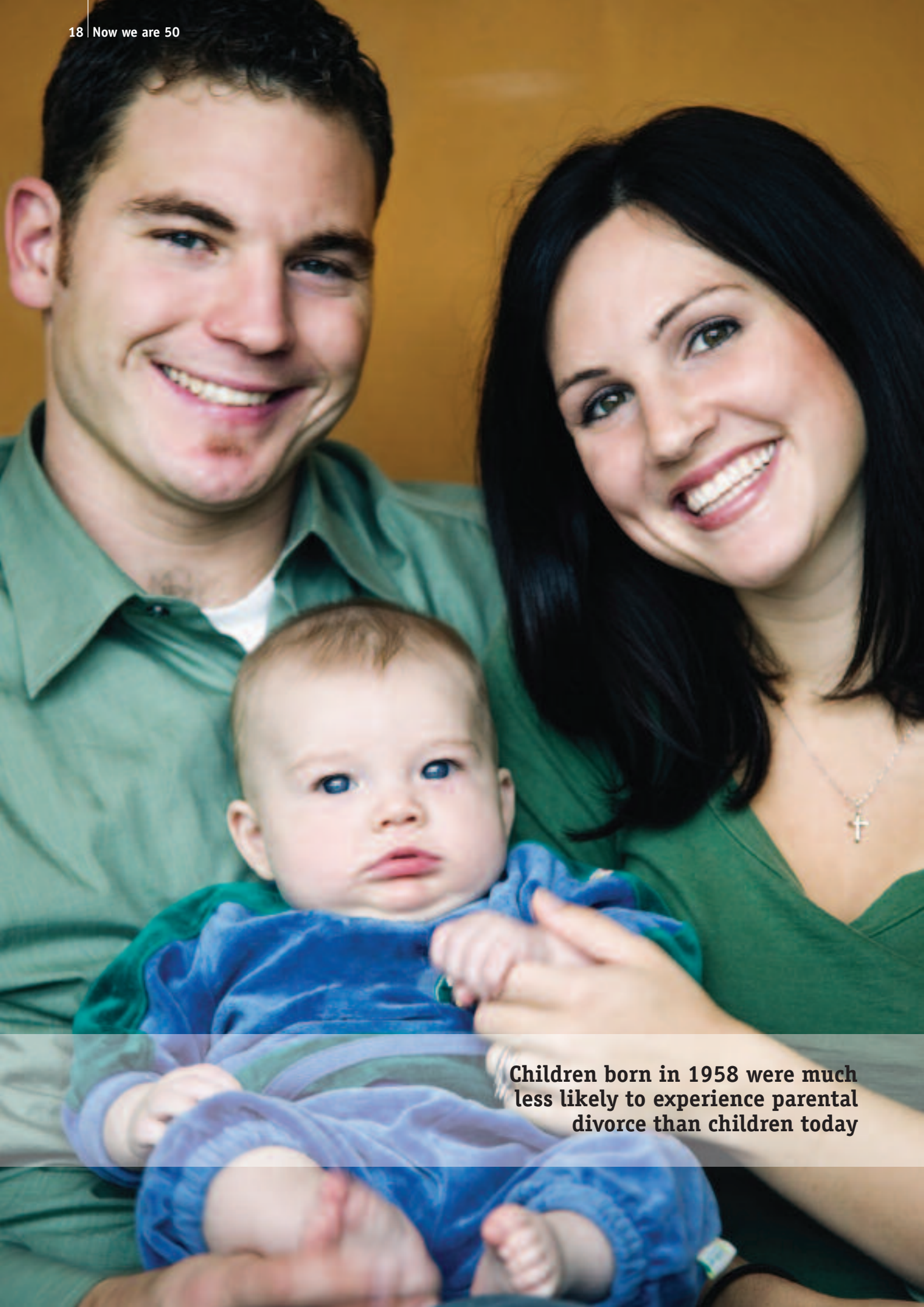
a: Perinatal Mortality Survey

b: Target sample – the follow-up surveys at ages 7, 11 and 16 (NCDS1-3) included immigrant children born in the same week as the original cohort members

c: This could be the cohort member, their spouse or partner

d: Achieved sample with at least one survey instrument (source of information) partially completed





**Children born in 1958 were much less likely to experience parental divorce than children today**

# 3: Partnership and parenthood

**Kathleen Kiernan**  
**University of York**

Family life has undergone dramatic changes over the last fifty years. Children born in 1958 were overwhelmingly born to married parents (95%) compared with 56% of children born in 2006. And fewer than one in ten children born in 1958 saw their parents separate by the time they were 16 compared with more than a third of children today who have recently turned 16.

Declines in marriage, increased cohabitation and divorce alongside increased childbearing outside of marriage and changing age patterns of becoming a parent have translated into more diverse, complex and often inequitable family settings for children. These changes in family life have fuelled public debates and raised policy concerns about their implications for the lives of children and parents, and society more generally.

The information collected in the National Child Development Study (NCDS) has been invaluable in contributing to our knowledge of these matters. As an illustration of its value, this chapter examines its contribution to our understanding of the effects of divorce on children; and its role in highlighting the prior and subsequent deprivation associated with early entry into parenthood.

## Parental divorce

As a result of extensive research on the 1958 cohort, it is now clearly established that far from being a single event in children's lives, parental divorce is a process that can begin years before their parents separate and has repercussions that reverberate through childhood and into adulthood.

Until the advent of studies using the NCDS, it was invariably assumed that differences between children who have and have not experienced parental divorce are due to post-divorce circumstances rather than factors that existed before the separation; that parental divorce only affects children in the short term; and that re-marriage is benign for children.

The research shows that children from separated families do less well on reading and maths tests in school and have more behaviour problems compared with children from families who stay together. But the path-breaking finding, made possible by having the repeated observations of the 1958 cohort, was that the differences between children on cognitive tests and behaviour assessments are already in evidence for some children even before their parents separate (Elliott and Richards, 1990; Cherlin et al, 1991).

## *The long-term impact of parental divorce*

From tracking the lives of the cohort members into adulthood, we now have evidence that parental divorce during childhood can have negative effects on adult lives across a range of domains, including socio-economic attainment, partnership and parenthood behaviour, and mental wellbeing and health.

Relative to those whose parents stayed together, children who experienced the break-up of their parents' marriage tend to have lower educational attainment and lower incomes, and they are more likely to be unemployed, to be in less prestigious occupations and to be living in social housing in adult life (Kiernan, 1997a).

Young women who experienced parental divorce are more likely than their peers to cohabit or marry at young ages, to bear children in their teens and to conceive and bear children outside of marriage. And men and women from disrupted families are in turn more likely to experience the break-up of their own partnerships and marriages (Kiernan, 1997a; Kiernan and Cherlin, 1999).

Children from divorced families also report higher levels of alcohol consumption and problem drinking in adulthood (Esaugh and Power, 1991). They also report poorer levels of general health, and a small minority of young adults develop serious mental health problems associated with parental divorce (Chase-Lansdale et al, 1995).

## *Pre-divorce factors matter*

Parental divorce during childhood can have a negative effect on adult lives, but some of these difficulties also relate to personal and family circumstances that precede the break-up.

So, for example, pre-divorce factors, especially financial hardship, are important in explaining the increased likelihood that children whose parents divorced lack qualifications, are unemployed or live in social housing as adults. In other words, children who grew up with both their parents become better qualified and are in better jobs as adults partly due to their families being socially advantaged to begin with and not necessarily because their parents had stayed together.

These findings suggest that not taking account of the pre-existing difficulties of children and their families may overstate the effect of growing up in a lone-parent family or stepfamily (Kiernan,

## Men and women from disrupted families are more likely to experience the break-up of their own partnerships and marriages

1997a). But pre-divorce circumstances are less influential in accounting for why children of divorce differ in their personal relationships and parenthood behaviour in adulthood.

### Post-childhood divorce

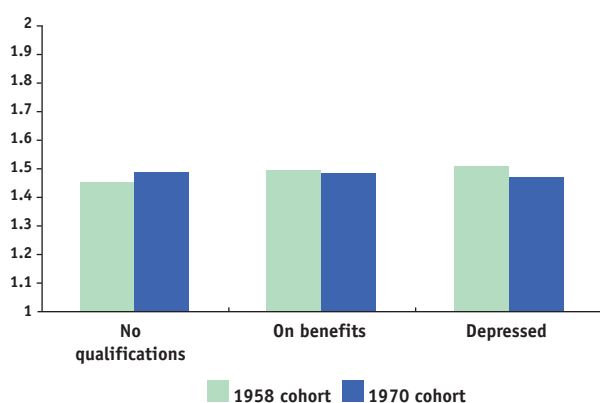
Another important question on which the NCDS has shed light is whether parents who remain together until their children are grown up before separating lessen the legacy of divorce on their adult children's lives. The answer is in the affirmative for most adult outcomes, but the instability of partnerships and marriages is as high among those whose parents separated after they had grown up as among those who experienced parental divorce during childhood (Furstenberg and Kiernan, 2001).

### Re-marriage

Many mothers re-marry or re-partner after divorce. Adding a stepfather to the household usually improves children's standard of living. Moreover, in a stepfamily, two adults are available to monitor children's behaviour, provide supervision and assist them with problems. For such reasons, it might be expected that children would be better off in stepfamilies than in lone-mother families.

Analysis of the NCDS provided some of the first evidence showing that this is not necessarily the case (Ferri, 1984; Kiernan, 1992). Children in stepfamilies tend to exhibit more problems than children with continuously married parents and have about the same level of problems as children of lone mothers. In the main, it appears that although children in stepfamilies may be better off financially, on other dimensions, there is little difference between children in lone-mother families and stepfamilies both in childhood and adulthood.

**Figure 3.1: The impact of parental divorce: odds ratios for outcomes at age 33 (the 1958 cohort) and 30 (the 1970 cohort)**



Source: Sigle-Rushton et al, 2005

### More divorce, less impact?

Children born in 1958 were much less likely to experience parental divorce than children today, and it might be expected that as divorce has become more commonplace, its effects might have reduced. Yet a comparison with children born in 1970, 21% of whom had experienced the break-up of their parents' marriage by the time they were 16 in contrast to the 9% of the 1958 cohort, shows that this is not the case.

Figure 3.1 shows the odds of whether the men and women in these two cohorts who had experienced a parental divorce lacked qualifications, were in receipt of benefits and reported clinical levels of depression in their early thirties. The estimates across cohorts are surprisingly similar in magnitude and not significantly different from one another (Sigle-Rushton et al, 2005).

### Becoming a young parent

British children are more likely than other European children to see their parents separate. They are also more likely to be born to young parents, which in turn increases their chances of growing up disadvantaged.

Teenage pregnancy was one of the areas targeted by the Labour government when it came to power in 1997 and the then Prime Minister Tony Blair asked the newly formed Social Exclusion Unit 'to study the reasons for our record on teenage pregnancies and to develop a strategy to cut the rates of teenage parenthood' (SEU, 1999).

The findings from the NCDS that showed the extent of impoverishment before and after youthful parenthood were instrumental in getting this issue on the policy agenda (Joseph Rowntree Foundation, 1995).

### Who becomes a teenage mother?

There is now a considerable body of evidence from longitudinal studies starting with the research on the NCDS showing that teenage mothers are disproportionately drawn from the more disadvantaged groups, and have the least propitious childhood and adolescent experiences.

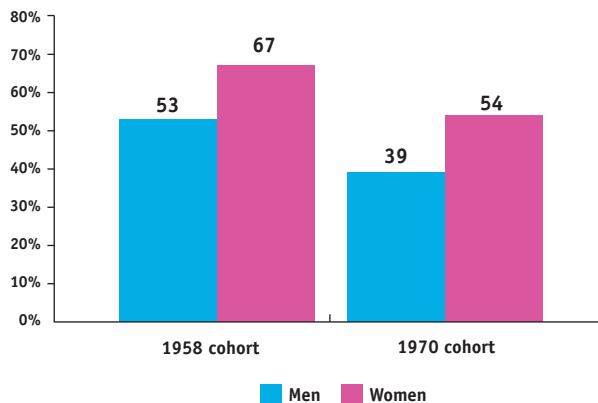
Young mothers are the most likely to come from economically disadvantaged families, to have lower educational attainment, to have exhibited higher levels of emotional problems, particularly during adolescence, and to have come from disrupted families. Low educational attainment is the most powerful single factor associated with becoming a young parent.

The research reveals that 61% of teenage mothers had completed their education without attaining any formal qualifications,



## Teenage mothers are disproportionately drawn from the more disadvantaged groups – and have the least propitious childhood and adolescent experiences

Figure 3.2: First births by age 30



compared with 23% of those who had become mothers at an older age. But it also emerged that children whose school attainment had substantially improved between the ages of 7 and 16 were no more likely to become young parents than teenagers who had done well at school throughout their childhood, whereas those whose school attainment declined had among the highest risks of becoming young parents.

With the advent of testing as part of the National Curriculum, it is possible to identify groups of underachieving children more systematically than was the case when the 1958 cohort was growing up, and perhaps take appropriate action. Deterioration in test scores is of concern if it translates into behaviours that reduce young people's life chances (Kiernan, 1997b).

### *The importance of early parenthood as a social issue*

Early parenthood is deemed to be an area of concern because research on the NCDS and later studies has shown that compared with older mothers (particularly those who become mothers after their early twenties), teenage mothers are more likely in later life to be living in low-income households and to be relying on state benefits to support themselves and their children, even after allowing for a wide range of background factors. Young mothers are also the most likely to be living in social housing and to have experienced homelessness, and their general physical health and mental wellbeing tends to be poorer than that reported by older mothers.

In addition, compared with older mothers, young mothers are more likely to commence family life as a lone parent, and among those who partner or marry, they are also the most likely to become lone parents. In a nutshell, teenage mothers' wellbeing is on average much lower than their counterparts who become mothers at older ages particularly from their mid-twenties onwards, and this lowered wellbeing has crucial knock-on effects for their children's wellbeing and development (Hobcraft and Kiernan, 2001).

### The rise of older motherhood, unmarried motherhood and childlessness

Teenage childbearing in Britain has intensified as a social problem but in contrast with other European countries, there has been little reduction in the rates of teenage fertility over the last few decades. The big developments in fertility behaviour common to Britain and other developed countries have been the movement to later motherhood and dramatic changes in the partnership context within which children are born.

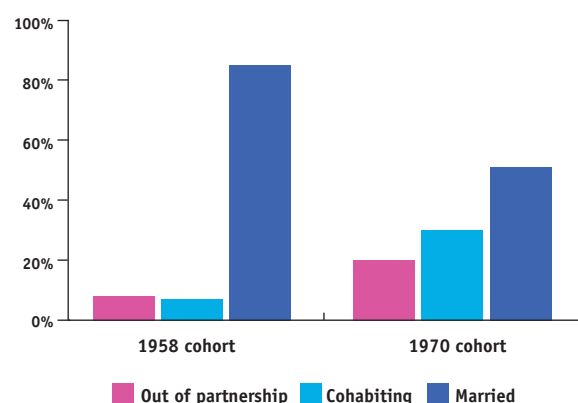
This is clear from Figure 3.2. Comparing these two cohorts born just 12 years apart, two thirds of the women in the 1958 cohort had had a child by the age of thirty compared with just over half of those born in 1970. And 53% of the men in the 1958 cohort had had a child compared with only 39% of those born in 1970.

Although 95% of the 1958 cohort were born within marriage, fewer of them have gone on to have children within marriage. Figure 3.3 shows that of those who had had a child by the age of thirty, 83% had their first child within marriage. This proportion is much higher than that for the 1970 cohort, where only 51% of those who had become mothers did so within marriage. This latter figure is likely to be higher when more have become mothers, probably of the order of 60%.

Childlessness is also on the increase: nearly 18% of the 1958 cohort had not had a child by the age of forty compared with 8% of women born 12 years earlier in 1946.

Undoubtedly, children born in 1958 had much more stable childhoods than have their own children and on entering adulthood, the changing patterns of marriage and childbearing were only beginning to take off. Their children, who are now entering adulthood, will exhibit markedly different partnership and parenthood behaviour.

Figure 3.3: Partnership contexts for the first children of members of the 1958 and 1970 cohorts



## 4: Infant and child health

**Euan Ross**  
King's College London

The 'birth' of longitudinal child development studies was in March 1946 at a time when Britain was 'on its knees' after the Second World War. James Douglas and colleagues made 'an attempt to interview all women (by health visitors) delivered during the week... [in] March 1946, at a date eight weeks after the birth of their babies', and the results were published two years later (Royal College of Obstetricians and Gynaecologists Committee, 1948).

During the 1950s, a small but influential group of obstetricians, midwives, sociologists, paediatricians and voluntary bodies believed that a further and more in-depth study of births was needed. Dire problems in the country's maternity services persisted, but accurate information about the state of children's health and the long-term influence on matters concerning management of pregnancy and birth remained scanty, and there was inadequate scientific information on which to base policies or determine 'best practice'.

As chapter 2 recounts, the efforts of this group ultimately led to the Perinatal Mortality Survey in 1958 and, after the follow-up survey in 1965, what became known as the National Child Development Study (NCDS). This chapter describes some of the key findings about infant and child health that emerged from these early surveys of the 1958 cohort.

In 1958, nearly all midwives who undertook home deliveries were employed by the local authorities through their local public health service or by hospitals; a very few worked privately. All the employing authorities were asked and all but one ultimately agreed to ask every midwife who delivered a mother during the study week to complete a seven page form (covering the mother's medical history; educational and work history and marital status; place of delivery; length of gestation; the baby's weight and length, and the baby's condition on delivery) and to track the baby's progress for the first seven days.


A vast amount of data accrued from this study. By investigating the factors related to mortality risk and the wellbeing of the newborn baby, analysis of these data demonstrated many facts that are now commonplace and was able to give numerical precision to often observed relationships. It showed, for example, that the risk of a perinatal death was 50% higher than average if the mother was having her fifth or subsequent baby, and was 30% higher in mothers who smoked heavily during pregnancy compared with non-smokers (Butler and Bonham, 1963; Butler and Alberman, 1969).

### Perinatal mortality and the place of delivery debate

During the week in which the 1958 cohort members were born, 33 per 1,000 infants were delivered stillborn or died during their first week of life. This figure, known as the perinatal mortality rate, is a good measure of the development of a country. The rate was lowest in second-born children at 23.5; it rose to 50.5 in fifth or later pregnancies. For all pregnancies in mothers older than 35, the rate was 49.

These findings immediately demanded explanation and action. One focus of attention was where babies were delivered. Of the mothers of the 1958 cohort, 41% were 'booked' for hospital delivery and 35% were booked for and had their babies at home. The remaining 24% were either not booked anywhere or transferred from home for urgent hospital delivery. This group had by far the highest perinatal mortality rate, a finding that led to an urgent review of maternity services and a better understanding of which mothers could be regarded as having an acceptable risk of safe delivery at home.

The high complication rate and excessive perinatal death rate among those who had little or no antenatal care and those who were booked to have a home delivery but needed urgent transfer



**The first survey of the 1958 birth cohort provided some of the first insights into the best place to deliver babies and the impact of maternal smoking in pregnancy**

## Continuing research on the 1958 cohort has shed light on cancer and leukaemia in childhood, behavioural disorder, educational delay and disability

to hospital for delivery had a profound effect on national policy. Subsequently, home delivery almost disappeared and perinatal mortality declined markedly: the 1970 birth cohort had a rate of 23 per 1,000, reflecting improvements in the following 12 years; and by 2005, the rate had fallen to around 8 per 1,000 though wide social class differences remain.

The rapid shift to higher rates of hospital delivery was made possible by shortening postnatal stays in hospital and a gradual increase in maternity beds. The study repeatedly demonstrated the need for steps to promote the health of pregnant mothers and facilities for safe childbirth. This led to the modernisation of maternity services with ready availability of high quality obstetrics on the one hand and better and more personal care for all. The case was made for adequate numbers of hospital beds and abolition of the lottery of where to give birth.

Debate about where best to deliver babies continues to the present. The findings – summarised in two books by Neville Butler and colleagues (Butler and Bonham, 1963; Butler and Alberman, 1969) – remain highly relevant today and deserve to be republished, preferably in a more readable form to enable those involved in making policy to inform their decisions.

These long learned lessons may never have been taught to politicians and poorly trained administrators and managers. It is never ‘cheap’ to provide poor maternity services. Home births must only be undertaken in situations where very early transfer to hospital at the first sign of need is possible and where adequate numbers of highly experienced midwives and general practitioners are available.

### Maternal smoking in pregnancy

One last minute addition to the 1958 questionnaire given to midwives was a brief question about mothers’ smoking habits. Just before the questionnaire was to be printed, a report from the United States had shown that babies whose mother had smoked during pregnancy tended to be lighter at birth than those whose mothers had not smoked (Simpson, 1957).

Although it was appreciated that mothers who smoked were more likely to be poor and perhaps less well nourished than non-smokers, analysis of the British data showed that even when allowance is made for social class, mother’s age, family size and other social factors, smoking contributed powerfully to a lower birth weight of infants and to an increased death rate (Butler et al, 1972). Higher rates of spontaneous abortion in smokers were also reported.

Follow-up surveys of the 1958 cohort have shown that children of women who smoked in pregnancy were shorter at age 7 (Goldstein, 1971), more likely to have wheezing illness after age

16 and, by early adulthood, they were fatter (Power and Jefferis, 2002) and had fewer educational qualifications (Fogelman and Manor, 1988). This information has led to much research into the biological effects of smoking and national policy to dissuade mothers and fathers from smoking in pregnancy. Sadly, even after fifty years there are still some who fail to ‘get the message’.

### Perinatal factors and later life outcomes

The follow-up surveys of the 1958 cohort members at ages 7, 11 and 16 meant that their condition at birth could be linked to their later development in terms of health, education and social status. Educational outcomes are discussed in detail in Davie et al (1972). The most revealing findings come when an attempt is made to look for the influence of events in the mothers’ pregnancy in combination with her socio-economic status.

These factors work cumulatively together. For example, looking at the ability of children aged 7 to read, we find that the strongest influence comes from the social background of children, but other, strongly influential factors come from a child’s gender, position in the birth order and how many younger siblings they have. First-born children tend to achieve more highly at school though second-born children tend to be larger and have fewer problems around birth. While girls tend to be lighter at birth, at age 7, they are typically ahead of boys on scholastic tests and in terms of their social adjustment.

Neville Butler (probably referring to his daughters) was fond of saying ‘If you want to read well at age 7, choose parents who are high in the social pecking order, be a girl, be their first-born, have few younger siblings and don’t let your mother smoke during pregnancy and see to it she is aged between 25 to 34 years’. These factors remain just as relevant today and raise questions about ‘social engineering’ for a society that proclaims that it wants its children to be socially well adjusted and well educated.

Similar cumulative factors operate together to influence the height of children. As an illustration, at age 7, children with an unskilled parent, fourth born or later, with two or more younger siblings, a low birth weight and a short mother who smoked heavily during pregnancy were on average 14cm shorter than those who were not exposed to this combination of adverse factors.

Recent research has used the longitudinal nature of the NCDS to examine the long-term effects of breastfeeding. For example, Rudnicka et al (2007) demonstrate that, compared with those who were bottle-fed with formula milk, children who were breastfed for more than a month had a reduced waist circumference and waist/hip ratio, and lower odds of obesity as adults in their mid-forties.



## There remain great opportunities to learn yet more about the influences of antenatal life, birth and health in early life on the individuals as they age

These associations remain even after controlling for background factors such as birth weight, pre-pregnancy maternal weight, maternal smoking during pregnancy, socio-economic position in childhood and adulthood, region of birth, gender and current smoking status. But the authors report that these associations are relatively small and therefore not of substantial public health importance.

A series of sub-studies of the NCDS has been undertaken on groups of young people with a problem, whether medical, educational or social. As an illustration, one sub-study looked at all those with any mention of having had a fit recorded in the 7 and 11 year follow-up studies. For the first time, it became possible to give a picture of seizure disorders, not just among those who attended hospital. The study gave the numbers of affected people, their type of epilepsy and factors involved in causation (Ross et al, 1980).

Many other sub-studies have shed light on cancer and leukaemia in childhood, behavioural disorder, educational delay and disability. Again, it was possible to determine whether there was any relation between life before and during birth, where and how the child was delivered and problems in the early days of life and their subsequent health and educational pattern.

### From sperm to worm

The NCDS and the later birth cohorts have resulted in Britain having more and better data than anywhere else in the world about the factors that influence children's development, health and happiness. The families – and the children themselves as they grew up – freely gave this information. The data are stored in strict confidence but they are open to anonymised analysis by those with legitimate access.

From re-reading the study reports and books that have been published over the course of the fifty years since 1958, it is apparent that not enough has yet been made of the potential to exploit the longitudinal nature of the accumulated data. There remain great opportunities to learn yet more about the influences of antenatal life, birth and health in early life on the individuals as they age.

Do optimal birth weight, a non-smoking mother and breastfeeding continue to influence our long-term health into middle and old age? Do they influence the processes by which dementia creeps up on us and our cardiovascular system degenerates? These are questions that continuing follow-up of the 1958 cohort – 'from sperm to worm' as Neville Butler loved to say – is well placed to answer.

### Neville Butler

**Professor Neville Butler, founder of both the 1958 and 1970 birth cohort studies and an ardent supporter of the Millennium Cohort Study, died on February 22, 2007 at the age of 86.**

We now take for granted that research following people from birth through to adulthood has value in helping to find solutions to the problems of modern life. However, Neville Butler was one of the pioneers in this field of 'longitudinal enquiry'. He inspired a generation of medical and social researchers to study the long-term consequences of early childhood experience and the factors that reinforce positive and negative development in people's lives.

Neville began his career after the Second World War as a paediatrician in University College Hospital, moving from there to Great Ormond Street Hospital for Sick Children. He later became professor of child health at the University of Bristol where he worked for twenty years. At the time, large-scale national longitudinal enquiry was barely imaginable and attracted little government interest.

Neville was a distinguished medical scientist whose early work on antenatal care, smoking in pregnancy, fetal growth and optimum place of delivery was recognised through his election to the Fellowship of the Royal College of Obstetricians. But more than anything he exemplified the courage, commitment and campaigning zeal needed to move a field of science into new dimensions of progress.

Throughout his life he persistently pursued the goals that through modern computing have only relatively recently become fully realisable. His genius was recognising the power of longitudinal studies to aid understanding of the origins of human successes and failures in every area of life from health to citizenship. Even more important, he recognised how significant this knowledge was for shaping policy to help people move their lives in positive directions.

(Extracts from John Bynner's obituary of Neville Butler. The full text is here:

<http://www.cls.ioe.ac.uk/news.asp?section=000100010003&item=396>)



**Information on the 1958 cohort has been used to address issues of major importance for educational policy, including the controversial grammar school question**

# 5: School education

**Sandra McNally**

**Centre for Economic Performance, London School of Economics**

The National Child Development Study (NCDS) has been used to address key questions in the economics of education: what are the wage returns to different qualifications? What can be done to improve performance in schools? And what are the consequences of educational structures?

Such is the richness of the NCDS for addressing these (and related) questions that it would be impossible to do justice to the breadth of research about education using this data, especially taking account of different disciplinary perspectives. This chapter largely restricts discussion to how the NCDS has been used to address these three questions.

## The wage returns to education

Having some idea about the wage returns to education is important for an individual's decision about how much to invest in education (in terms of effort or duration). It is also important for policy-makers. For example, should individuals be subsidised to stay on in education, and should the compulsory school leaving age be raised? If the wage returns to education were very low, then we probably would not be having this debate.

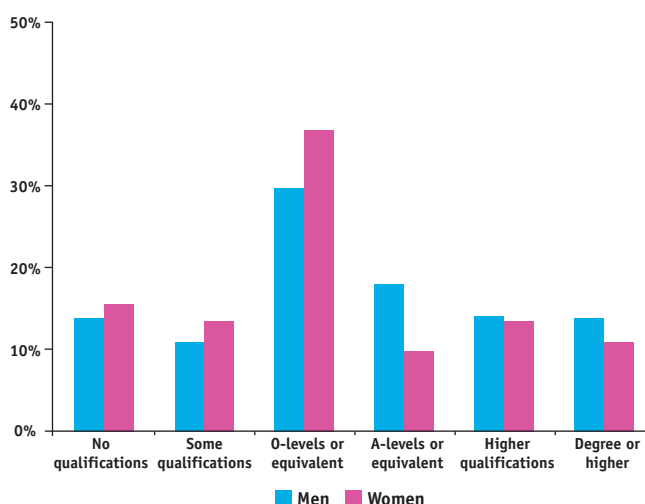
The NCDS provides excellent data for investigating this issue because it contains such rich information, including the educational qualifications of cohort members. As Figure 5.1 shows, most of them had some form of educational qualification at age 33, although nearly 15% did not.

Has this educational investment been worth it to individuals in terms of the wage they receive? At first glance, it might seem obvious that there are high wage returns to education, but in fact, this is not the case. If highly able people invest more in

education, then it will be difficult to tell to what extent they earn more because they are highly able or because they are more highly educated.

The beauty of the NCDS is that individuals are tested at different ages and there is extensive information about family background as children grow older. This makes it possible to discern the relationship between educational attainment and subsequent earnings after taking account of all these potentially confounding factors.

**Figure 5.1: Percentage of men and women in the 1958 cohort by level of highest qualification, measured at age 33 in 1981**



Source: analysis of NCDS age 33 data on qualifications



**Compared with leaving school at 16 without qualifications, average wage returns are 18% for O-levels, 24% for A-levels and 48% for higher education**

But methodological issues do not stop there. Another important problem is that individuals may vary widely in their expected returns to education. The NCDS has been used extensively to explore the seriousness of such potential problems as well as to estimate wage returns.

The key studies are Dearden (1999a, 1999b) and Blundell et al (2000), who then subsequently went onto more systematic analyses of returns using different methodologies (Blundell et al, 2005a, 2005b). Blundell et al (2005b) use four different methodologies to estimate returns to education using the NCDS. This has led to a much better understanding of the importance of the assumptions needed to estimate returns to education generally (both in the NCDS and other data).

The main findings of this research are that the overall wage returns to educational qualifications are sizeable and significant at each stage of the educational process, even after controlling for selection and allowing for heterogeneity in returns. Compared with leaving school at 16 without qualifications, these studies find an average wage return of 18% for O-levels, 24% for A-levels and 48% for higher education (see Figure 5.2).

The analysis is done for men only because of the additional complexity of dealing with selection into employment by women. But there is evidence of even higher wage returns to education for women (Dearden, 1999b).

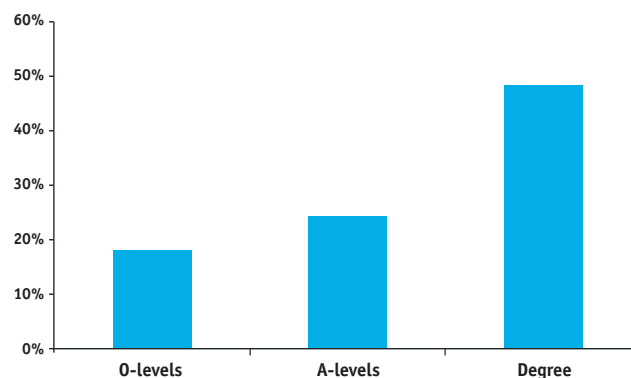
What do these wage returns mean in terms of extra earnings over the lifecycle? If we make certain assumptions – that labour market participation occurs between the ages of 20 and 65; that 3% is an appropriate discount rate; and that the average wages measured at age 34 remain constant over the working life – we can provide a rough estimate. Relative to leaving school at 16 without qualifications, these average returns for O-levels, A-levels and higher education are equivalent to capital sums of £116,168, £123,601 and £332,363 respectively over the working life.

### What matters about schooling?

Individuals and the economy in general clearly benefit from having good educational qualifications. But what is it about schooling that improves performance both in terms of educational attainment and labour market outcomes?

The NCDS has been used to analyse this question as well as questions relating to the role of parental education and social

**Figure 5.2: Average wage returns to different qualifications**



Source: Blundell et al, 2005b

class in affecting educational attainment (Douglas, 1964, and Plowden, 1967, are early examples). It has also been combined with the 1970 British Cohort Study to examine the changing role of cognitive ability and parental background in determining educational achievement (Galindo-Rueda and Vignoles, 2005) and changes in educational inequality over time (Blanden et al, 2005).

To understand the role of school inputs, analysis has often used an educational 'production function', in which an outcome measure (such as educational qualifications or wages) is related to a series of inputs (including characteristics of the school, child and family). Studies that have used the NCDS to look at this issue include Currie and Thomas (2001), Dearden et al (2002), Dolton and Vignoles (1997), Dustmann et al (2003), Feinstein and Symons (1999), Harmon and Walker (2000) and Robertson and Symons (2003).

The study by Dearden et al (2002) is one of the most comprehensive for understanding the impact of different school inputs on educational attainment and wages at various ages. The authors are careful to control for early test scores, family background and local area characteristics. Their results show that, conditional on these other characteristics, going to a grammar school or private school raises wages (especially for men) but going to a single sex school has a negative average impact for men and a positive average impact for women.



## The average returns for O-levels, A-levels and higher education are equivalent to capital sums of £116,168, £123,601 and £332,363 respectively over the working life

The focus of this study is mainly on the effects of going to a grammar school and of class size (the pupil-teacher ratio). It does not find a strong effect for class size: the estimated effect is small for women and non-existent for men, conditional on other characteristics.

This contrasts with Dustmann et al (2003), who argue that the sample sizes are too small to identify the true effect of class size without imposing additional structure on the analysis. They argue that class size does have an effect on wages via the effect it has on the decision to stay in education after 16.

Furthermore, they argue that although the effects are small, they accumulate to quite a substantial earnings effect over an individual's working life. This example illustrates that even very rich data do not eliminate controversy over findings, though it does help us to understand why researchers come to different conclusions from analysing secondary data sources. This is shown even more strongly in the debate about grammar schools.

### The grammar school question

One of the country's most important educational reforms was the change in the education system from one based on selection by ability to the comprehensive model. In the former, children who passed a test known as the 'eleven-plus' had the opportunity to attend grammar schools (where they received an academic education) whereas if they failed, they went to 'secondary moderns' (which had a vocational orientation).

The system came to be seen as extremely unfair and divisive and thus a reform was instigated in 1965, which took place gradually over the next decade. Today, the selective system remains in place in Northern Ireland and a handful of English local authorities.

The 1958 cohort was going to secondary school at a time in which the education system was in the process of reform. About 12% of the members attended grammar school. The NCDS has been used to ask two main questions: what is the effect of going to grammar school in the context of a selective system, where the alternative is going to a secondary modern school and not a comprehensive school? And what is the effect of going to school in a selective local authority compared with one that had gone comprehensive?

Many studies have addressed these issues and Crook et al (1999) provide a detailed review. More recent studies using the NCDS

include Dearden et al (2002), Harmon and Walker (2000), Galindo-Rueda and Vignoles (2004), Manning and Pischke (2006) and Maurin and McNally (2008).

In general, studies that focus on the effect of attending grammar school in a selective context (where the alternative was going to a secondary modern) find a positive effect for those who were able to get in. For educational outcomes as a whole, many researchers conclude that the evidence does not support claims to the superiority of either system (Crook et al, 1999).

Analysis by Manning and Pischke (2006) casts doubt on the conclusions of much earlier work. They show that conditioning on a large set of control variables does not eliminate selection bias – the unobservable variables that affect whether individuals went to grammar school and their educational attainment. They show this by relating school type to test scores at age 11 (conditional on many other controls). If the effect of grammar school were causal, then it should affect test scores at age 16 but not test scores at age 11 (pre-secondary school).

In fact, they show that going to grammar school 'produces' an equally large effect on test scores at age 11 (done before the cohort went to secondary school) as it does on test scores at age 16. This analysis should sound a cautionary note to anyone who would rely exclusively on such approaches for making policy decisions. But the richness of the NCDS is what has enabled this to be shown. Furthermore, it does not prevent researchers (including myself) trying to find new approaches to using the NCDS to answer these still very pertinent questions.

### Lessons for educational policy

The NCDS has been used to ask questions of major importance for educational policy. The analysis reviewed here shows that the wage returns to academic qualifications are very high. Much light has also been shed on the importance of school inputs and school structures, although these issues remain deeply controversial.

In recent years, the NCDS has been combined with other data – most notably the 1970 cohort – to show changes in educational inequality over time and changes in the role of ability and family background in explaining educational attainment (see chapter 6). There will be plenty more to come.

## 6: Born to fail? The impact of childhood disadvantage

Jo Blanden

University of Surrey and Centre for Economic Performance, London School of Economics

Reducing child poverty and promoting the wellbeing of children growing up in deprivation have become a serious policy issue for all the major political parties in recent years:

*'Our goal for this generation is to abolish child poverty and let me reaffirm that goal today.'* Prime Minister Gordon Brown, speech to Labour Party conference, 24 September 2007

*'We can make British poverty history and we will make British poverty history but only if we are honest about the causes of poverty and address ourselves to the long-term task of removing those causes as well as the symptoms.'*

David Cameron MP, leader of the Conservative Party, speech to Chance UK, 16 October 2007

*'No-one seriously denies that poverty has an impact on educational attainment and social mobility... the Liberal Democrats would open up opportunity for our young people and increase social mobility.'* Nick Clegg MP, leader of the Liberal Democrat Party, speech to the Public Management and Policy Association, 29 January 2008

Some of this interest is doubtless due to the pursuit of political gain. But there has also been a significant impact from research: we now know much more about the serious consequences of growing up in disadvantage; and findings from the National Child Development Study (NCDS) have made an important contribution to this understanding. This chapter summarises the evidence from the NCDS.

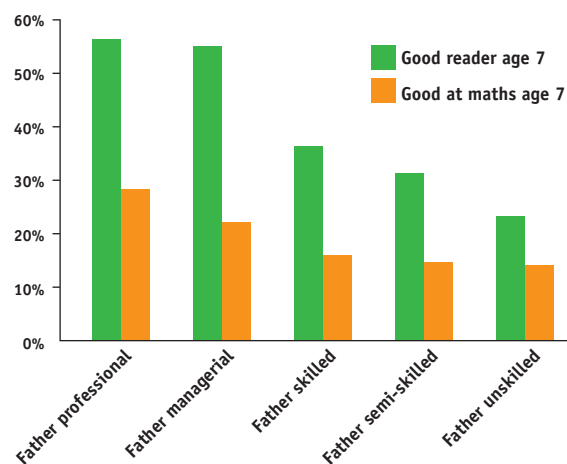
### Family background and educational outcomes

The 1958 cohort provided some of the earliest large-scale evidence of the impact of family background on children's development. The highly influential Plowden report (1967) included evidence from the cohort at age 7 that showed a strong link between performance in reading and maths and father's occupational status, a crude measure of parental advantage or disadvantage.

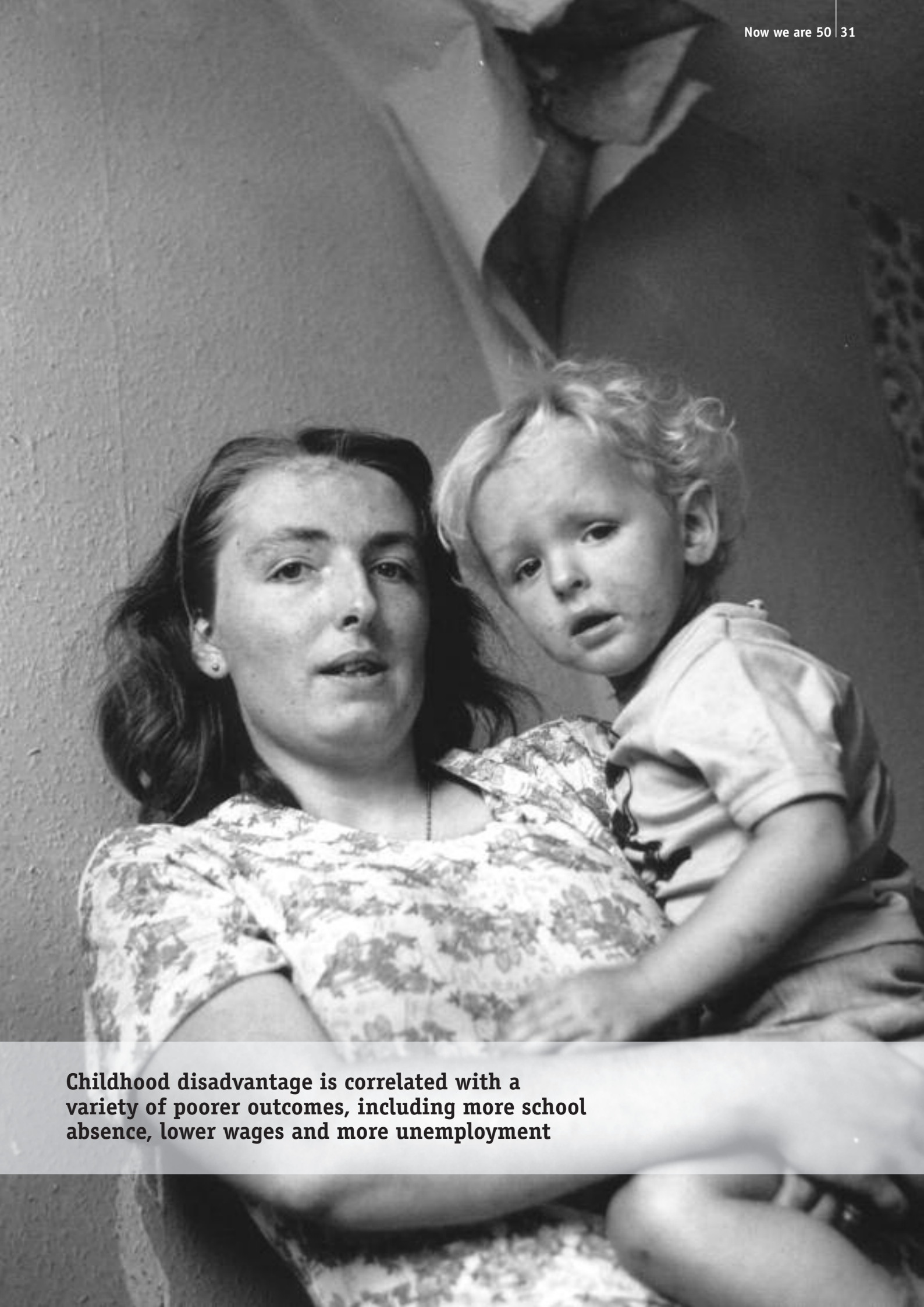
As Figure 6.1 shows, 23% of children from the lowest social class were 'good readers' compared with 56% of children from the top social class. Other evidence from the NCDS used in the Plowden report gave some indications of how early material circumstances could be offset: those children from lower social class groups whose parents interacted with the class teacher closed the gap with their more privileged peers.

The first study to focus specifically on disadvantage was called *Born to Fail?* (Prosser and Wedge, 1973). This study defined disadvantage as having low income, poor housing and a disadvantageous family situation (a lone mother or many siblings) at age 11. Once again, the educational implications of disadvantage were made clear with disadvantaged children shown to be less likely to be well adjusted at school, more likely to be defined as having special educational needs and, on average, three and half years behind the non-disadvantaged in terms of reading ability.

**Figure 6.1: Early evidence from the NCDS included in the Plowden report**



Source: Plowden report, 1967



**Childhood disadvantage is correlated with a variety of poorer outcomes, including more school absence, lower wages and more unemployment**

## The 1958 cohort provided some of the earliest evidence of the impact of family background on children's development

The Prosser and Wedge study also considered health outcomes, finding that poor children had lower average birth weight, and were more prone to chronic conditions and more likely to have accidents. In general, this study and the follow-up of the cohort at age 16 (Wedge and Essen, 1982) painted a striking picture of the multiple disadvantages faced by children from poor family backgrounds. It is thanks to the detailed longitudinal nature of the NCDS that such a comprehensive picture of growing up in disadvantage could be developed.

### Is it the parents or the money?

The rather depressing conclusions of these early studies were followed by the more upbeat *Escape from Disadvantage* (Pilling, 1990). Pilling concentrates on the fifth of those who Wedge and Essen defined as being disadvantaged at age 16 but who had above average qualifications by age 23. This study finds that parental involvement and support were very important in helping 'escape' to take place.

Micklewright (1989) also looks at the data at age 23 and considers the determinants of the decision to stay in school after 16. Whereas the early studies showed poor children performing less well in education, Micklewright uses the richness of the data to distinguish the effects of parental social class, parental education and income.

From a policy point of view, this is essential. If the effects of family background are driven by the fundamental characteristics of parents rather than money in itself, it is more difficult to see how poorer children can be helped. Micklewright finds that this is indeed the case: once parental education, social class and previous ability have been taken into account, there is only a very weak influence of family finances.

### Outcomes in later life

Since the NCDS survey in 1991, when the cohort members were aged 33, the number of studies tracing the progress of disadvantaged youngsters has proliferated. Gregg and Machin (1999) measure the effects of being in care, living in financial difficulties, growing up with a single mother and having an unemployed father. They take a sequential approach, which first examines how childhood characteristics lead to 'delinquency' at 16, and then shows how this feeds into outcomes at age 23 and 33.

The results show that childhood disadvantage is correlated with a whole variety of poorer outcomes such as a higher probability of teen motherhood and contact with the police, more school absence, lower wages and more unemployment.

The role of educational achievement is shown to be pivotal with much of the relationship between disadvantage, delinquency, lower earnings and unemployment generated because of the lower educational attainment of disadvantaged young people. It seems that the early results for education in the Plowden report were showing crucial differences that went on to shape children's life chances.

Gregg and Machin's consideration of the impact of disadvantage on delinquency raises the question of the impact of disadvantage on behaviour. Sacker et al (2002) find that measures of psychosocial adjustment had a stronger relationship with material deprivation than they did with parental social class and parental aspirations. In addition, this study finds that the relationship between material disadvantage and social adjustment and educational achievement grew throughout the school years.

One of the effects of disadvantage detected in *Born to Fail?* was the relationship between growing up in poverty and childhood ill health. Health inequalities by social class are a well-known phenomenon, but the longitudinal nature of the NCDS has enabled researchers to learn much more about their causes and dynamics.

The relationship between adult health and adult social class can be explained in two ways: either social class in childhood determines health and both persist; or poor health leads to less occupational success.

Power et al (1996) find that at age 33, 5% of professional women report having poor or fair health compared with 13% of semi-skilled or unskilled women (health inequalities for men are less pronounced). By examining the extent of social mobility among those in differing health, this study dismisses the hypothesis that social class evolution is responsible for health inequalities, rather that the majority can be explained by the role of lifetime disadvantage in shaping health outcomes.

Data from the NCDS have presented a persuasive picture of the important role that childhood deprivation and disadvantage can have on later educational, social and economic outcomes. These findings (along with those from other data sources) have become accepted in policy circles and have played a large part in shaping thinking on social exclusion.

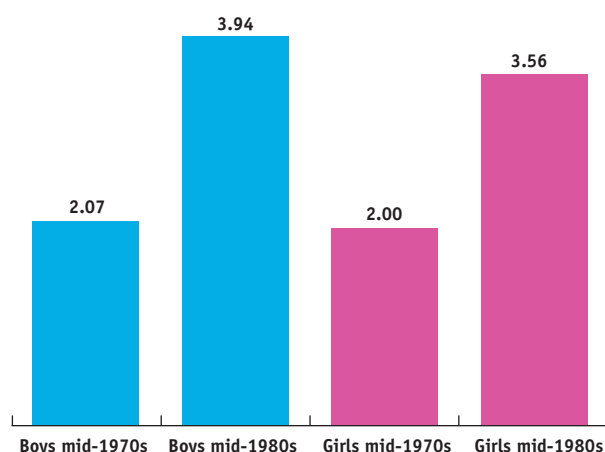
### Comparisons with later generations

What we knew less about until recently was how these findings from the NCDS compared with those from other cohorts. In 2000, the 1970 cohort was revisited at age 30, which made it possible for many of the findings from the NCDS to be compared with the



## The early results for education were showing crucial differences that went on to shape children's life chances

**Figure 6.2: How teenage poverty affects the odds of being poor as an adult**



Note: The bars report the odds ratios for poverty at 16 in a logit model of poverty at age 33 for the 1958 cohort and age 30 for the 1970 cohort.

younger cohort. Some of the findings from this exercise have been extremely influential in policy circles, re-opening the debate on the intergenerational persistence of disadvantage and what can be done about it.

Blanden et al (2004) compare the intergenerational mobility of income across the 1970 and 1958 cohorts, finding that the relationship between parental income at age 16 and earnings in the early thirties had strengthened. This study was followed up by Blanden and Gibbons (2006), who concentrate specifically on the transmission of poverty and once again find an increased effect of family background in the second cohort.

Figure 6.2 shows the 'odds ratios' from this study, which reveal the increased chance of being poor in adulthood if an individual is from a poor, compared with a non-poor background. As we would expect, the persistence of poverty in the 1958 cohort was sizeable, with those brought up in poverty twice as likely to be poor adults as others are, but for the 1970 cohort this increased to 4 times higher for men and 3.6 times higher for women.

The increased effect of family background and material deprivation in the later cohort is also supported by the findings of Schoon et al (2002) who consider educational achievement as their main outcome.

The detail we have on the intergenerational effects of disadvantage has also been extended by the inclusion of the children of one third of the cohort members when they were surveyed at age 33. Children's maths, reading and vocabulary

skills were tested and information was gathered from the mother on the behaviour and home environment of the children.

Gregg and Machin (1999) show that measures of disadvantage and deprivation for the young cohort members continue to have an impact on the educational outcomes of their children: the impact of disadvantage plays out across two generations.

McCulloch and Joshi (1991) match the NCDS data on children with information on their local area from the 1991 census and examine the relative importance of family versus community deprivation on children's educational performance. They find that while community factors have a role to play for younger children, family factors dominate. This study confirms the importance of looking within the home (an area where the cohort data excel) and also shows the potential of matching the NCDS survey data with information from government records.

### Early disadvantage and later life chances

The richness of information collected in the NCDS enabled early studies to create an extremely detailed picture of what it meant to grow up in disadvantage in the 1960s and 1970s. As the children grew up, the longitudinal nature of the data has allowed researchers to look at how disadvantage affected a wide variety of adult outcomes and to build up a comprehensive picture of the impact of early disadvantage on later life chances. This picture has been essential in raising the profile of childhood disadvantage and focusing policy in this direction.





**The 1958 cohort has provided invaluable insights into the development of physical and emotional health throughout childhood and subsequent links with adult health**



# 7: Health into mid-adulthood

**Chris Power**

**Institute of Child Health, University College London**

From its origins in the birth survey of 1958, the National Child Development Study (NCDS) has made significant contributions to what we know about healthy human development. Over decades of research, the study has demonstrated the pathways through which events, experiences and health status at one age affect life chances at a later age (Power and Elliott, 2006). This chapter outlines the contribution of research based on the 1958 cohort to our understanding of health and disease in adulthood.

The framework for this overview is provided by Figure 7.1, which highlights the four major pathways from childhood to adult health: development of physical and emotional health; and health behaviour (both of which are direct influences on adult health); and cognitive development and educational progress; and the social identities developed by young people (which are more indirect pathways, because of the influence they have on socio-economic circumstances in adulthood, which in turn influence adult health).

Although factors later in life will also affect health in adulthood, the framework focuses on childhood circumstances to illustrate the related pathways likely to be involved.

## Development of physical and emotional health

The NCDS has provided invaluable insights into the development of physical and emotional health throughout childhood and subsequent links with adult health. For example, there is evidence that the fattest children at age 7 have increased risks of becoming obese adults (Power et al, 1997), particularly if they have a manual social background (Power and Moynihan, 1988) or overweight parents (Lake et al, 1997). Yet apart from children at the extremes of the distribution in terms of body mass index, childhood body size is not a strong influence on adult body size.

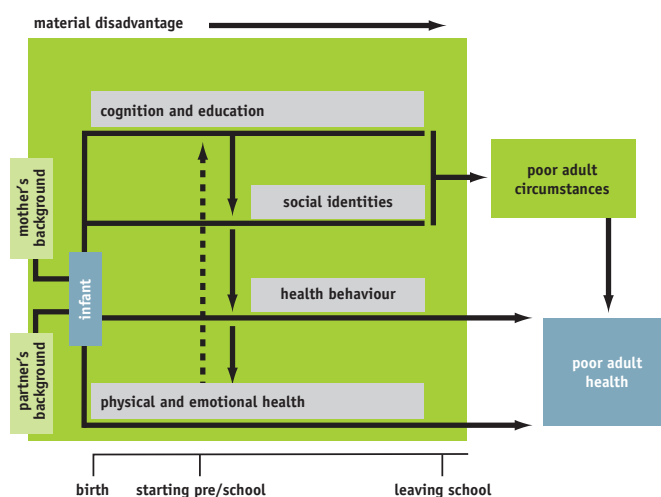
Similarly, for vision and hearing, levels of function persist during childhood and into adult life. For example, hearing levels at ages 7, 11 and 16 predict adult levels, but even for those with severe defects, there can be recovery of normal function for some children (Fogelman, 1983). And a more general measure of childhood chronic or disabling conditions is predictive of later outcomes, increasing the risk of a limiting illness in adulthood.

The study has also yielded important information on asthma and wheezing, showing that of those who had symptoms before age 7, 50% had attacks when they were 33, 35% had complete remission, 5% had persistent symptoms and the remainder had intermittent symptoms (Strachan et al, 1996a).

A concern that people who 'outgrow' asthma after early childhood may be vulnerable to lung disease in middle age has not been borne out by the study: lung function in early adulthood was normal for this group when aged 34-35 and remained so ten years later. But those with persistent asthma through adolescence, even though symptom-free, had reduced airflow (Strachan et al, 1996b), and those with a history of pneumonia in early childhood had poorer lung function at age 34-35 (Johnston et al, 1998).

The NCDS has also revealed continuities in socio-emotional development between the ages of 7, 11 and 16. This suggests that children's behaviour has a modest level of stability, although it cannot be assumed to be constant (Fogelman, 1983). More recently, it has been established that most adult mental health disorders with features of depression and anxiety first started in

**Figure 7.1: Lifecourse framework linking childhood disadvantage to poor adult health**



Source: Graham and Power, 2004

## Research on the 1958 cohort has shown the impact of several key health behaviours, including smoking, physical activity, dietary habits and alcohol consumption

childhood. For schizophrenia, abnormalities of social adjustment have been detected in childhood in some people who developed psychotic illness in adulthood (Done et al, 1994).

These examples demonstrate that, in addition to being important in its own right, children's physical and emotional health is of interest because of its potential to affect health status in adulthood.

### Health behaviour

Several key health behaviours – including smoking, physical activity, dietary habits and alcohol consumption – have been investigated using the NCDS, and links established between these behaviours and adult health. For example, adolescents who drink most and most frequently are more likely to drink heavily in adulthood.

Similarly, adolescent smoking is associated with increased likelihood of smoking through to mid-adulthood, and, in turn, smokers have poorer glucose control (indicating a higher risk of type 2 diabetes) in mid-adulthood.

But while smoking habits appear to be relatively stable over time (Jefferis et al, 2004), the stability of physical activity levels appears to be less so (Parsons et al, 2005). Nevertheless, compared with those who decrease the frequency of their physical activity over time, those who increase their activity have a tendency to show greater improvements in the quality of their diet.

### Childhood circumstances and adult health

The first reports of the NCDS showed that health outcomes, such as low birth weight, were socially patterned, with more adverse outcomes among the least advantaged.

Social class of origin was associated with subsequent physical and emotional development (birth weight, height, body mass index and emotional state); health behaviours (of individuals and their parents); economic circumstances from birth to adulthood; educational achievements and related adult work roles; and social and family characteristics that contribute to the shaping of social identities.

Subsequently in mid-life, at age 45, social class of origin was associated with a range of measures that indicate disease risk and physical and mental functioning, such as blood pressure, body mass index, blood lipids, blood glucose, lung function and hearing levels. The general trend across these measures is of deteriorating health between higher and lower social classes.

For most measures, adult social position is also important, so

that when social circumstances are considered across the lifecourse, the greatest deficits in adult health are apparent among individuals with a manual class in both childhood and adulthood. This research highlights the importance of early life exposures, as well as the established adult exposures, for prevention of some chronic conditions in adulthood.

### Adult health in mid-life

During adulthood (ages 23 to 42), information on the health status of the 1958 cohort members was obtained by self-reporting, although childhood measures of physical and emotional development had been assessed in medical examinations. Recently (that is, at age 44-45), nurses visited cohort members in their homes to undertake the first clinical assessment in adulthood.

The primary objective of this assessment, funded under the Medical Research Council's 'Health of the Public' initiative, was to establish how developmental, lifestyle and environmental factors act throughout the lifespan to influence current ill health and physiological and psychological function in early middle age. Markers of cardiovascular and respiratory disease, mental health, vision and hearing were measured among over 9,000 adults.

The results are now emerging in relation to the health of the cohort in mid-life. For example, with cardiovascular disease, scientists have been uncertain about how important people's childhood is to their health as adults. The study has demonstrated that risk factors, such as body mass index, are more common among those with a less advantaged social position in childhood, as well as in adulthood, suggesting that factors in early life affect the risk of cardiovascular disease.

Among potential underlying reasons for the childhood factors that may be operating, the study has found that the growth pattern of individuals associated with the least advantaged social position (namely, a combination of lower prenatal growth, shorter child-to-adult height but greater risk of obesity) is associated, for example, with higher blood pressure, blood lipids and blood glucose levels in mid-adulthood. Evidence from the study suggests that factors in pregnancy, such as mother's smoking, may also be influential by increasing the risk of adult obesity.

But emotional development may also play a role: a poorer emotional state in childhood is associated with a worse profile of risk factors for cardiovascular disease in midlife, largely because of its adverse affect on behaviours such as smoking and lack of exercise, which in turn are likely to affect the risks. For diabetes risk, some emotional adversities are associated with an increased risk of adult obesity and thereby also increased the risk for type 2 diabetes.



## The greatest deficits in adult health are apparent among individuals with a manual class in both childhood and adulthood

Analysis of sensory functions shows that levels of hearing loss are influenced, as expected, by adult factors such as exposure to noise, but early life may also be important. While the specific early life factors have yet to be clarified, the study suggests that this is a potentially fruitful new line of enquiry for hearing research.

Myopia (short-sightedness) is also affected by early life development, in particular growth (before birth and through childhood) and factors that influence this growth. Studies of other eye conditions, investigating amblyopia (where one eye is under-used) and colour vision defects (such as colour blindness), find that neither condition has an impact on a person's health, employment or daily activities in adulthood.

### Genetics

A recent study carried out by the Wellcome Trust Case Control Consortium has made important breakthroughs in understanding links between people's genes and some of the most common diseases, including diabetes, rheumatoid arthritis, Crohn's disease and coronary heart disease. The DNA of a sample of 1958 cohort members has made a vital contribution to this research: they kindly consented to providing a blood sample and for their DNA to be extracted from that blood for medical research.

The study has found a number of very small but significant differences in the patterns of genes for individuals with specific diseases and others in 'control' groups (individuals who do not have the disease). For example, those with coronary artery disease have a slightly different pattern of genes in a specific region of chromosome nine.

It is important to remember that these common diseases have complex sets of causes. They are part 'nurture', part 'nature'. Genes alone do not determine whether someone will get a disease such as diabetes. Environment and lifestyle also have a major influence on whether an individual gets a particular disease.

But the significance of the recent research is that by identifying the genes that are linked to conditions, scientists can gain a better understanding of which people are at most risk and how the disease occurs. This in turn may lead to the development of better treatments, improved diagnosis and better disease prevention.

### Adult life influences

The role of early life development and associated influences have been a focus of this chapter because of their influence on the attainment of peak health function, and, potentially at least, on health decline later in life. Adult life influences are of course highly relevant: for example, psychological distress and alcohol consumption in adulthood relate to individuals' own marital

status as well as that of their parents, with lower levels of both outcomes among married men and women.

In this instance, the NCDS has contributed to understanding how the associations appear to arise, with elevated psychological symptoms among the divorced appearing to be due to both selective and causal processes, while the heavy drinking levels of the divorced do not arise from selection, but accompany the transition to divorce, implying a causal relationship from divorce to drinking (Power et al, 1999; Hope et al, 1999).

Other adult risk factors, including unemployment, have also been shown to have selection and possible causal effects on mental health: men with poorer behavioural adjustment in childhood are more likely to experience unemployment in adulthood (Montgomery et al, 1996), although an association operating in the opposite direction is suggested by further work showing an increased risk of psychological problems needing medical attention for unemployed men (Montgomery et al, 1999).

Such adult life factors will increasingly be considered as influences on adult health status concurrently and into old age, with a focus on healthy ageing. This is an important agenda for future research on the 1958 cohort.

After five decades of research, the NCDS has contributed to understanding the developmental origins of adult disease and progress has been made on the extent to which childhood illness and deficits in development persist into adulthood.

It is important to emphasise that while the study provides evidence of tracking from childhood to adulthood of physical and emotional health and of health-related behaviours, there is substantial change over time. Social circumstances systematically affect life chances but again childhood characteristics do not completely determine adult outcomes.

A major direction of future research is to identify the factors that buffer the effects of earlier life characteristics. Disease and functional measures recently collected in mid-life will serve as a baseline for the assessment of future disease and health decline (see chapter 10). It will also be possible to investigate the factors and circumstances over individuals' lifetimes that help promote healthy ageing.

Few other sources of data are available to study these important public health topics, and it is therefore important to maintain high levels of participation so that the potential of the study can be fully realised. From a health perspective, the diverse measures available and their association with a substantial disease burden will ensure the continuing relevance of the NCDS to the health of the public.

# 8: Changes in women's paid work

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**Centre for Longitudinal Studies, Institute of Education, University of London**

Since 1958, there have been enormous changes in women's experiences of education and employment. These have partly arisen from the legislation of gender equality introduced in the mid-1970s (see chapter 1). But they have also been driven by dramatic changes in employment opportunities as the economy has shifted from being primarily based on manufacturing industries towards being more based on services.

From the early 1960s, employers started to realise that more mature women had many advantages as reliable and committed workers over teenagers straight from school. Instead of facing the 'marriage bar', which in some sectors of the economy had forced women to leave their jobs on getting married, going back to work after having time off to raise a family became an increasingly realistic proposition for mothers. Some of the mothers of the 1958 cohort would have been in the vanguard of these changes.

Women who were cohort members themselves took the process further, especially those who had benefited from the increased chance of entering higher education that this generation of children accessed in the wake of the 1944 Education Act and the large expansion of university places in the 1960s.

The generation of women who reached their fifties in 2008 are very different from earlier generations, including their own parents. But they also differ from each other in some respects, especially by whether they managed to gain a degree or other qualifications. This chapter describes some of the differences that have been revealed by research using the National Child Development Survey (NCDS).

## **Motherhood and employment for the previous generation**

When the 1958 cohort members were under 5, it was normally expected that mothers stayed at home to look after their children – and most of them did. But 29% of the cohort had mothers who did at least some paid work before their children reached 5. Of

those that did work, the majority (69%) had a part-time job. Working class families were slightly more likely to have working mothers at this stage. Around three quarters of childcare arrangements were informal (Hansen et al, 2006).

By the time the cohort members had finished primary school, it had become a common experience to have a mother in paid work (around three quarters) with a smaller difference between working class and middle class families (Joshi, 1985). This meant that in the cohort's mothers' generation, most women had fairly long breaks from paid work around childbirth. The few who started out as potential high flyers were likely to have returned to lowlier jobs with low wages in the part-time jobs they took up.

Probably few mothers thought about their future pensions in the 1950s and 1960s and, in particular, whether their absence from the labour market might lead to poverty in the future. Spending time looking after children instead of being at work seemed the natural thing to do for the majority of mothers.

For this reason, they would not be expected to earn big pensions (if any) in their own right over their lifetimes. Indeed, the government allowed married women to opt out of making pension contributions until 1977, even when they were working. But there were few divorces before the 1970s, so many mothers would have expected their husband's pension to provide for them in old age.

## **Motherhood and employment for the 1958 cohort**

The opportunities for women born in 1958 were different from those for their mothers, but they were not entirely transformed. They faced a higher risk of marriage breakdown, but they had more education, maternity leave, smaller gaps out of work while having children and more job opportunities. Women did better by standard equality measures as a result. The ratio of women's to men's hourly earnings improved for those having less time out of work to have children.



**The opportunities for women born in 1958 were different from those for their mothers, but they were not entirely transformed**

The 1958 cohort contains some highly educated women who set a new trend as they postponed childbirth into their thirties

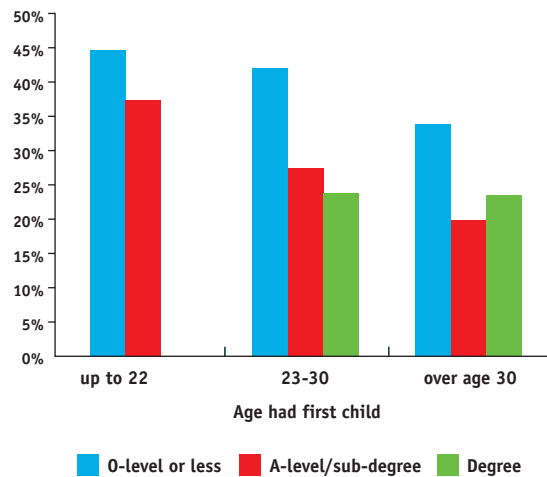
But equally, both men and women in the 1958 cohort experienced fairly severe recessions early in their working lives. Unemployment was very high in the late 1970s and again in the early 1990s, there was massive restructuring, and further recessions dried up some opportunities for women and men, particularly in manual industrial work.

But in all of these changes, experiences varied considerably according to the education level reached. Two thirds of boys and three fifths of girls in the cohort left school by age 16; approximately one quarter of boys and girls left school with A-levels; and 14% of boys and 11% of girls went on to get a degree. In the growing market of opportunities for women, these qualifications were an important driver of new patterns of engagement in employment (Makepeace et al, 2003).

Staying on longer in education means that starting a family also gets delayed, but in addition, the new earning opportunities for women added further delays to having children. Many took the opportunity to get established in a career before starting a family (Dex et al, 2005).

For those women in the cohort who had O-levels as their highest qualification, the average age of having their first child (where they had one) was 24. For those with A-levels, the average age of having their first child was nearly 28. But it was nearly 32 for women with a degree.

Figure 8.1. Percentage of mothers in the 1958 cohort who lost occupational status after childbirth



The 1958 cohort contains some highly educated women who set a new trend as they postponed childbirth into their thirties. In addition, when they did have children, the higher qualified women returned to work much faster than the lower educated earlier starters and had more success in maintaining their occupational status after childbirth.

Maternity leave gave mothers the right to return to their job with the same employer, which protected them from loss of status. But not all mothers were eligible in the early years of the scheme, so considerable numbers did not return to the same jobs, sometimes because they wanted to work part-time or have longer breaks. This made them vulnerable to losing occupational status, especially when returning to part-time jobs, which were and remain characterised by low pay.

A woman in the 1958 cohort who left school with O-levels or below and had a first child by age 22 would have spent on average nearly five years at home before returning to work. This was not unlike what her mother did. As Figure 8.1 shows, 45% of the 1958 cohort who became mothers by age 22 lost occupational status on returning to work.

The women who got A-levels but still had a child by age 22 spent nearly four years before going back to work at a slightly lower risk (37%) of occupational downgrading. Women who got an A-level but waited to have their first child until later in their twenties spent two years out of work before returning and 28% of them lost occupational status.

But most women who got a degree and waited until their thirties before becoming mothers had returned to work within the child's first year. Nevertheless, 24% of them lost occupational status, largely because of working part-time.

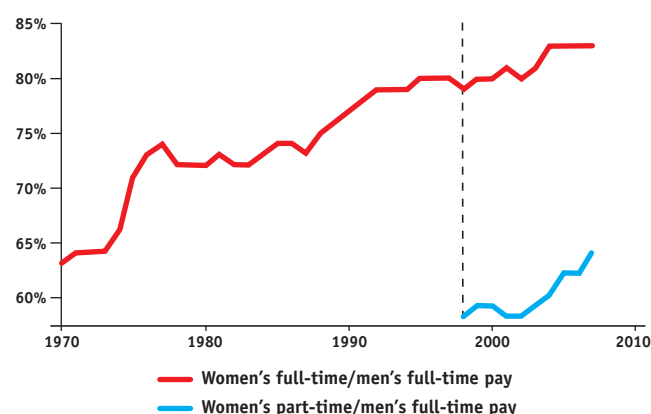
The passing of statutory maternity leave clearly facilitated the change in women's employment but the new higher qualifications and economic opportunities were also important. But taking a part-time job after having a family was career death for many mothers in this generation, despite having good qualifications, largely because there were no high paid part-time career jobs.

Interestingly, many men in the 1958 cohort have also suffered downward moves in employment: by age 42, around a quarter of them had experienced loss of occupational status at some point. The reasons for this are less well understood: they are not linked to having children but probably more a result of fluctuations in the economy.



## Taking a part-time job after having a family was career death for many mothers in the 1958 cohort, even for many with good qualifications

**Figure 8.2: Women's average full-time and part-time hourly earnings as a proportion of men's average full-time earnings, 1970-2007**



Sources: New Earnings Survey, 1970-1997, Annual Survey of Hours and Earnings, 1998-2007

Note: The Annual Survey of Hours and Earnings started in 1997 and fully replaced the New Earnings Survey in 2004. The ratio of women's part-time to men's full-time hourly pay is not shown prior to 1998 since the New Earnings Survey did not sample workers with earnings below the income tax threshold and provides unreliable estimates of women's average part-time pay.

### Wage equality

The gender pay gap has decreased over time as women have gained more educational qualifications and work experience. Figure 8.2 shows the upward trend in women's hourly earnings relative to men's hourly earnings since 1970 for the whole workforce.

Despite equal pay legislation from 1975 onwards, the experience of the 1958 cohort shows that a gender pay gap persists. This is due both to the division of family care between mothers and fathers and to unequal treatment in the workplace. Joshi and Paci's (1998) study remains an authority on the causes of the gender pay gap, comparing the experiences of the 1958 cohort with a cohort born 12 years earlier.

The study shows that women aged 33 working full-time in 1991 were paid on average 83% of men's hourly wage. After adjusting for the men aged 33 having more work experience and education, the gender wage ratio was 85%. This compares with the 1946 cohort, which had an adjusted ratio of women's to men's pay for full-timers of 81% when they were aged 31 in 1977 but an

unadjusted ratio of 74%. The evidence from the 1958 cohort also shows that the lower pay of mothers, compared with women without children and with men, is largely due to lower hourly earnings in part-time jobs.

The wages reported by the 1958 cohort show an increase in the gender gap with age: men's wages increase relative to women's between the ages of 23 and 42. This is partly the result of changes in the composition of the female workforce with different groups of women leaving and re-entering paid work. It is also partly the result of lower wage growth among women compared with men.

This lower wage growth is associated with interrupting a paid career to raise children, returning to part-time employment after having children and getting fewer pay rises and promotions (Dex et al, 2008). This research continues to explore how and why the gender pay gap increases with age (Joshi et al, 2007).

The minority of women with degrees in the 1958 cohort have pursued more continuous paid careers and have earnings approaching those of men. One study of women graduates finds that occupationally specific degrees, rather than non-occupational degrees, are associated with quicker returns to paid work after having children. In addition, being in professional rather than managerial occupations is associated with speedier returns to work and avoids the drop in earnings typically associated with returning to part-time work after a career interruption (Elliott et al, 2001).

At the other end of the spectrum, the minority of women and men without qualifications are likely to have fared worse than their parents. Having experienced two recessions and increases in wage inequality in the 1980s, men in the 1958 cohort have been more likely than their fathers to experience job losses, negative changes of occupation and decreases in their earnings (Dex et al, 2008).

### Policy impacts

The NCDS has helped to inform policy-making about the impact of economic and policy change on gender equality. The longitudinal perspective on careers helps to disentangle other influences on wage rates, and has been used in evidence to several official commissions set up to monitor and develop policy on equal pay (Kingsmill, 2001; Women and Work Commission, 2006).

Research has also had an influence on the government's recent reforms of the pensions system to improve the position of carers

## Research on the 1958 cohort has helped to inform policy-making about the impact of economic and policy change on gender equality

who have interrupted their careers to raise children or look after elderly relatives. Carers tend to make fewer national insurance contributions over the course of their working lives. With data from the 1958 cohort as well as other studies, it is possible to show that a great deal of caring activity that lowers people's earnings also affects their pension entitlements (Joshi, 2003).

This finding had an influence on the recommendation in the House of Lords' (2003) report to switch the basis of the state pension from national insurance contributions to citizenship. Although this recommendation was not completely adopted by the government, a number of measures to help carers gain better entitlement to state pensions were included in the Pensions Bill, introduced in 2006. Improvements included a reduction from 39 to 30 in the years needed to qualify for a full basic state pension and changes to make it easier for carers to gain the second state pension.

The evidence on the impact of employment interruptions on earnings has implications for policies around family-friendly employment practice, and maternity and paternity leave. Research on the employment histories of the 1958 cohort has shown there are economic and social advantages of having the option to avoid long spells away from the labour market.

The NCDS has also made a contribution to the policy debate through an investigation of the impact of mothers' employment in their children's very early years on later outcomes (Joshi and Verropoulou, 2000). This study was based on a sub-sample of the cohort's own children who were already of school age in 1991. The study contributed to the debate about extending maternity and paternity leave in 2003. Like so many other results from important and unique research on the cohort, it is a contribution to providing a robust evidence base for policy-making.

Things have improved now for women with a more equal wage ratio and less of a part-time wage penalty as flexible working in career jobs has become more widespread. But women who work part-time may well still suffer some loss of status in the longer term. The statutory parental leave (introduced in 1999) and statutory paid paternity leave introduced in 1993 have now made it easier for fathers to take more time off when their children are born, although too late for most fathers in the cohort to benefit.



# Life at fifty

Jane Elliott

Later this year, the next survey of the 1958 cohort will collect a great deal of detailed information about the health, lives and circumstances of people aged fifty. This will also allow for analysis of how childhood circumstances affect outcomes in mid-life.

Evidence from other nationally representative studies such as the British Household Panel Survey can also give an insight into the lives of fifty year olds. In the 2006 round of this survey, people of all ages were asked about the main advantages and disadvantages of being their age. Analysis of the responses from those who were fifty gives a valuable picture of what it feels like to be aged fifty today.

Two of the main negative themes that emerged from the comments related to health and employment difficulties. Many fifty year olds commented that they were not as fit as they used to be, they were putting on weight, they had more ailments or simply that they felt their body was starting to wear out:

*'I'm too old to play football now: physical deterioration – not as fit as I used to be.'*

*'Getting old – everything starts falling apart! The general lack of energy of a twenty year old when your nine year old wants you to run around on a football pitch.'*

*'I have more ailments, get more tired.'*

Several individuals also commented on age as a barrier to getting a new job:

*'It's harder to find jobs, even though I think I am more reliable.'*

*'Job-wise, it's a young people's world.'*

But many of the fifty year olds also made very positive comments and talked about the advantages of being fifty. Some of the main themes were having greater financial security and independence, having greater self-confidence and the benefits of age for providing wisdom, skills and experience. As one person said:

*'I have experience and life skills to draw on for future use but enough financial and health resources to still have an active, rewarding life.'*

Someone else commented that the advantage of being fifty was:

*'Knowing who I am, what I want out of life – have enough wisdom to know how to achieve it.'*

One particularly positive individual summed it up as follows:

*'Fifty is fantastic because you are old enough to know what you want and how to get it; and young enough to still enjoy it.'*

**'Fifty is fantastic because you are old enough to know what you want and how to get it; and young enough to still enjoy it'**





**Nearly two thirds of the 1958 cohort  
left school at 16 – just as pressure  
from employers for a better skilled  
workforce was beginning to grow**



# 9: Skills and lifelong learning

**John Bynner**

**Centre for Longitudinal Studies, Institute of Education, University of London**

In the mid-1970s, when the members of the National Child Development Study (NCDS) were leaving school, the labour market was undergoing massive change. Traditional industries – coal mining, steel, shipbuilding and manufacturing – were in steep decline. The service sector was expanding. Computers were starting to play a role in the workplace. And there was a steady rise in women's participation and part-time work.

At the same time, lifestyles were changing as marriage and parenthood were postponed, particularly among the more educated. The consequence was a widening gap between young people who delayed making long-term commitments while extending their education to gain qualifications, and those who pursued the traditional route to adulthood, leaving school at the minimum age to get a job and start a family.

Nearly two thirds of the 1958 cohort left school at 16. But pressure from employers for better qualifications was beginning to grow. The importance of education and training in preparing young people for the workplace was increasingly recognised and vocational qualifications were gaining attention. The raising of the school leaving age was part of that process as was an emphasis on curriculum reform.

This chapter examines the contribution of the NCDS to understanding the importance of skills for people's development throughout their lives.

## After 16

Today, when the target is 50% for young people entering higher education, it is striking that the teachers of the 1958 cohort thought that only one in ten of them was suitable for university. What's more, only 11% of them wanted to go, though 15% actually ended up going.

Traditional routes for the 90% who were expected to be earning a living by their late teens were differentiated by the 15% who had access to high quality training as part of an apprenticeship – combining work-based training with day release for college courses – compared with the others who mostly moved directly into full-time adult jobs.

Apprenticeships took between five and seven years to complete, and almost all of them were taken up by boys, one third of whom failed to complete. The main apprenticeship for girls was hairdressing (82%), and they made up 10% of the total apprentices (NCDS4 Research Team, 1987).

In 1974, when the 1958 cohort turned 16, the Labour government established the Manpower Services Commission, with the task of analysing the nation's need for skills and developing the means of meeting that need through reforms of vocational training. The first major intervention to supply these new opportunities for skills acquisition came through the Youth Opportunities Programme, introduced in 1978 largely as a response to growing unemployment among school leavers.

Some cohort members took advantage of this programme, but most of those who had started jobs on leaving school at the minimum age in 1974 did not need to, as the major economic transformations of the late 1970s had yet to bite. Cohort members were still benefiting from the general economic buoyancy that had persisted since the end of the Second World War.

Most cohort members therefore built up the work experience that remains an enormously important feature of employability. Their skills put them in good stead during the period in their early twenties when prospects changed considerably through the effects of a massive worldwide recession. As the economy subsequently began to recover, large numbers of cohort members were able to move relatively easily into jobs, albeit not in the industries and occupations in which they had been trained.

## Lifelong learning

In view of growing uncertainty about future employment prospects throughout their lives, it is not surprising that many cohort members made good what they were encouraged to see as deficiencies in their own educational experience by pursuing qualifications through their adult years. For example, when the cohort was surveyed at age 23, 28% of them had no qualifications. But by age 33, that percentage had reduced to 15%, and by 42, it was 12% (Ferri et al, 2003).

One issue that emerged from the survey at age 23 was the lack of literacy and numeracy skills among a significant section of the population. This survey had elicited cohort members' self-assessments of their literacy and numeracy skills, inviting them to say whether they had any difficulties. An influential report of the survey findings drew attention to the 4% of cohort members who said they had difficulties with reading, 9% with writing and 5% with number work (Hamilton and Stasinopoulous, 1987).

The response was a series of television programmes promoted by the BBC for solving people's reading problems. This built on an earlier initiative – *On the Move* – in which adult volunteers were

## Many cohort members have made good the deficiencies in their educational experiences by pursuing qualifications through their adult years

linked to people who had reported problems so that they could help them to improve.

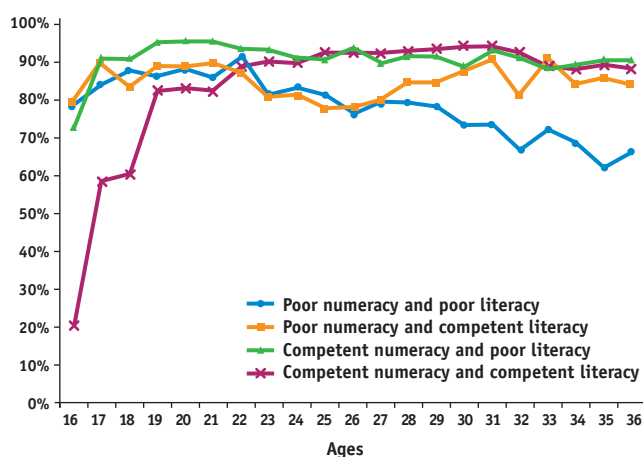
The self-assessment approach gave way at age 37 to an objective assessment of basic skills in a representative sample of 10% of the cohort. In the first of a series of reports for the Basic Skills Agency, funders of the survey, a higher proportion of cohort members were shown to have very poor reading (6%) than when they assessed themselves as having problems (4%). But for numeracy, the objectively assessed problem was eight times higher: nearly half the sample had what would be described now as 'entry level' (very poor) skills (Bynner and Parsons, 1997a, 1997b; Bynner et al, 1997; Bynner, 2004).

Analysis of the survey data also showed that such problems often arose from an educational career marred by disadvantage of different kinds, with long-term consequences in poor labour market history, difficult family relations and low levels of participation in political and community life (Bynner and Parsons, 1997a).

A rather unexpected and striking finding was that in relation to labour market participation and progress, women appeared to suffer particularly difficult problems if their numeracy was poor (Bynner and Parsons, 1997b). The problem appeared to be linked to the changing nature of the workplace, where computers were increasingly part of everyday work and financial accountability was growing in importance.

Figure 9.1 shows full-time employment rates between the ages of 16 and 37 for cohort members with poor literacy and poor numeracy compared with those with poor numeracy and poor literacy alone. For men, a combination of poor literacy and poor numeracy showed the lowest employment rate. For women, poor numeracy showed the lowest rate. This was within a pattern of withdrawal from full-time work, usually into part-time work as childbearing and family took over (Bynner and Parsons, 1997a).

**Figure 9.1a: Percentages of groups of men (defined by their basic skills) in full-time employment between the ages of 16 and 37**



## Policies to improve skills

The combination of this kind of evidence about the negative consequences of poor basic skills with international comparative evidence that basic skills levels in Britain were among the lowest in OECD countries – three times worse than in Sweden, for example – led to the establishment of the Moser committee in 1998, the task of which was to recommend what should be done to improve adult basic skills.

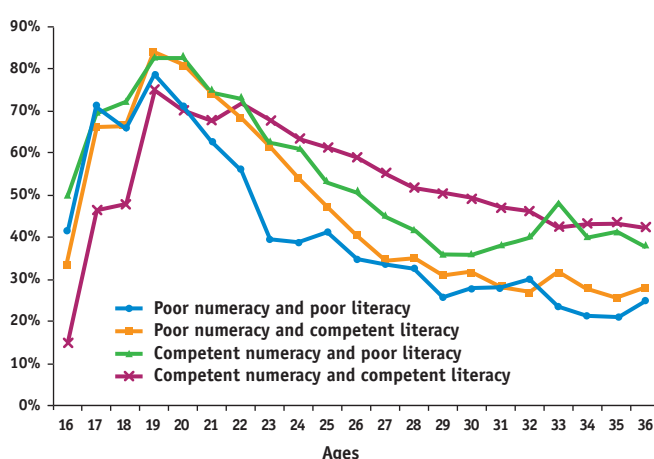
The committee's report (Moser, 1999) was highly influential in convincing the government of the need to place a high priority on raising basic skills levels, not least because without them, the establishment of the vocational courses leading to qualifications and skills development generally was going to be impeded.

Research that followed the publication of the Moser report for the 2000 comprehensive spending review drew on the NCDS and other survey data to make the case for major government spending on basic skills enhancement. It was estimated that achievement of the Moser targets of 10% improvement in literacy and numeracy would save the taxpayer £0.44 billion for literacy and £2.54 billion for numeracy (Bynner et al, 2001).

'Skills for Life' – the programme of skills enhancement that followed the Moser report – not only encouraged individuals to take courses but professionalised the teaching of literacy and numeracy, requiring that all tutors should have the equivalent of a level 4 (higher education) qualification.

It also led to the establishment of the National Centre for Research and Development in adult literacy and numeracy, in which cohort research has had a major role. The Leitch report (2006) is the latest clarion call for national 'upskilling', which again makes much use of evidence from the NCDS to argue the case for enhancing the population's basic skills.

**Figure 9.1b: Percentages of groups of women (defined by their basic skills) in full-time employment between the ages of 16 and 37**



## Participation in different forms of adult learning leads to benefits in terms of personal wellbeing, civic awareness and political engagement

**Table 9.1: Percentages of groups of men and women (defined by their numeracy scores at age 37) with work-related skills**

	Very low numeracy score	Low numeracy score	Average numeracy score	Good numeracy score
<b>MEN</b>				
Write clearly	37%	47%	48%	65%
Reading plans	36%	56%	62%	70%
Typing/keyboard	13%	15%	21%	34%
Computing	11%	18%	23%	41%
Teaching	23%	34%	33%	48%
Maths calculation	21%	34%	49%	68%
Comprehension	39%	54%	64%	78%
<b>WOMEN</b>				
Write clearly	61%	76%	74%	83%
Reading plans	23%	34%	38%	50%
Typing/keyboard	25%	39%	34%	37%
Computing	13%	24%	21%	31%
Teaching	46%	49%	52%	60%
Maths calculation	14%	36%	35%	51%
Comprehension	37%	65%	70%	77%

### Upgrading skills

The extent to which poor basic skills underpin poor skills more generally is indicated in Table 9.1, which shows how assessed poor numeracy at age 37 related to a range of other skills that cohort members reported. Those with the lowest numeracy skills were most likely to report lacking other skills, including those central to modern employment such as computing.

Table 9.1 shows clear gradients for all the other skills listed with rising skills accompanying higher numeracy levels (Bynner and Parsons, 2004). The exceptions (not shown) were 'using tools' for men (the typical odd job man), and 'providing care' for women (early motherhood and childcare as the major occupation).

The route to continuous upgrading of skills and qualifications is most commonly through vocational and academic courses taken through further education colleges. By age 42, 37% of men and 30% of women in the 1958 cohort had taken courses leading to qualifications, and 44% of men and 24% of women had taken part in various forms of (non-certificated) work-related training.

Another form of extended education that was a major feature of the 1980s and 1990s was non-vocational adult learning (courses taken out of interest rather than for employment reasons). Unlike the other types of course, in this case, the majority of the 30% participants were women (Ferri, 1993; Ferri et al, 2003).

Despite all the exhortations about the need for lifelong learning, the majority of the 1958 cohort still remain largely untouched by it. Alan Tuckett, director of the National Institute of Adult

Continuing Education, uses evidence on adult participation in courses from his organisation's own surveys to criticise the government's inconsistent approach: 'If learning is so important to the health of communities why is there so little of it?' (*Guardian*, 20 May 2008).

### Do skills matter?

The value of vocational qualifications in getting first jobs is questioned in work using NCDS data (McIntosh and Vignoles, 2001; Vignoles et al, 2004). The wage returns tend to be no better, though not worse, than those from being in work.

Noble (1997) makes the point that skills alone are not enough to create high quality work. Investment in jobs is also needed. But when asked precisely what skills they are seeking in new recruits, employers are often hard pushed to reply.

Chris Humphries, newly appointed head of the commission for employment and skills, suggests that what attracts employers are the 'soft skills' associated with such personal attributes as motivation, communication, team working and willingness to learn (*Guardian*, 20 May 2008). Many of these skills link to the less obvious but nevertheless highly important returns to learning, which, as Alan Tuckett argues, underpin cohesive and democratic societies.

The pioneering research in this area is by the Centre for Research on the Wider Benefits of Learning at the Institute of Education. Using data from the survey of the 1958 cohort in 2000, this research shows that participation in different forms of adult learning leads to benefits at age 42 in terms of personal wellbeing, civic awareness and political engagement (Schuller et al, 2004). Such attributes lie at the heart of capability, on which functioning in all domains of life, not just employment, depends (Sen, 1992).

### The benefits of extending education

The continual extension of education is an inevitable consequence of the uncertain world in which we live. When it is unclear what the future holds, it makes sense to build human and social capital, and learning plays a key part in that process. We also gain the sense of personal fulfilment that learning brings.

The concern must be that such a substantial section of the population, often stuck on a trajectory of disadvantage, still fails to gain the educational foundations for the lifelong learning that is needed.

The NCDS demonstrated the need and supplied much of the evidence of the consequences of failing to meet the need that have been central to the debate. What has been learned from cohort members' own lives has truly helped to shape the future.

# 10: What lies ahead?

**James Banks and Gemma Tetlow**  
**Institute for Fiscal Studies**

Probably the only thing that the members of the 1958 cohort have in common with each other is that they have just turned fifty. But this fact alone is not of particular note; indeed, it may well be the least interesting thing about them as a group. Their common biological age already hides vast differences in physical, economic and social functioning, and these ‘within-cohort’ differences will only increase as they get older.

Were we to have a crystal ball, we would see that while the cohort members are the same distance from birth, they differ greatly in their distance from retirement, from the onset of poor health and disability, from family events such as grandparenthood and widowhood, and ultimately they differ greatly in how long they will live.

The English Longitudinal Study of Ageing (ELSA) provides longitudinal data (collected every two years since 2002) with which to study the older population in England. Since the ELSA sample is representative of the population aged fifty and over, it provides the perfect place to look for a quantitative description of what the next few years will hold for the members of the 1958 cohort.

This chapter looks at some simple patterns emerging from ELSA to paint a broad-brush picture of the distribution of outcomes that can be expected for the cohort members between now and when they reach the state pension age.

The analysis excludes any possible cohort effects that may lead to the 1958 cohort having different outcomes in the future than those born over the previous ten years. For many of the processes – health and demographics in particular – these are likely to be small given the relatively similar dates of birth of the groups in question.

The possible exception is employment, where cohort effects (and the related issue of the generally increasing macroeconomic trend of employment rates at older ages that has been observed over the past few years) are likely to mean that employment probabilities may well be a little higher than the numbers suggest.

## Employment and the timing of retirement

Given the recent debate on population ageing, successive reforms to state pensions and widespread reductions in the generosity of employer pensions, perhaps the first set of issues that springs to mind when thinking about the group moving through their fifties and approaching retirement is that of economic resources, pension saving and the timing of retirement.

The 1958 cohort is at the vanguard of an important economic change in this dimension: the state pension age for women will be 65. In addition, many more women in this age group will reach the state pension age having spent a much more substantial period of time in the labour market than previous generations. Yet already many cohort members are not working, and this proportion will increase sharply over the next few years.


Emmerson and Tetlow (2006) use ELSA data on labour market participation rates to show that around three quarters of 52-54 year olds are in paid work with the numbers only slightly higher for men (80%) than for women (73%). By 55-59, these rates fall to two thirds of men and half of women in paid work, and by 60-64, the rates are one third and one fifth respectively.

But the same data also suggest that those out of work at these ages come predominantly from the top of the wealth distribution – where individuals leave work through early retirement – and the bottom – where individuals are typically economically inactive and often report a health condition that limits the type or amount of work they can do (Banks, 2006; Emmerson and Tetlow, 2006). It is in the middle of the wealth distribution where people are currently likely to stay in work the longest.

## Predicting retirement resources

Future employment patterns will be a key driver of the adequacy of future retirement incomes and calculations from early waves of ELSA data have predicted the distribution of such retirement resources for the population currently in their fifties.



A close-up photograph of an older man and woman smiling. The man, in the foreground, has grey hair and is wearing a blue and grey argyle sweater over a blue checkered shirt. The woman, slightly behind him, has short white hair and is wearing a light-colored patterned top. They are both looking towards the left of the frame with joyful expressions. The background is blurred, showing what appears to be an indoor setting with some green and white structures.

**In the next ten years, most of the 1958 cohort will experience their children leaving home, the arrival of grandchildren and the loss of one or both parents**

## Most formative lifecourse events have happened by the time people reach their fifties – but it is only from then onwards that the full consequences of past choices emerge

**Table 10.1: Predicted retirement incomes of those aged fifty to state pension age in 2002**

Percentage distribution	Distribution of predicted equivalised retirement income on reaching the state pension age			
	<£10,000 per annum	£10,000-£20,000	£20,000-£30,000	>£30,000 per annum
Source of wealth used to finance retirement income:				
Pension only	49%	36%	12%	3%
Pension + non-housing wealth	39%	37%	15%	9%
Pension + non-housing wealth + housing + expected inheritances	29%	39%	19%	13%

Source: Banks et al, 2005

Table 10.1 reports the fractions of the population aged between fifty and the state pension age that are predicted to retire on to incomes of various levels (adjusted for family size). These calculations take account of individuals' subjective expectations of when they will work in the future and such data, which ELSA collects routinely, have thus far had high predictive power.

Table 10.1 also shows the importance of various sources of retirement wealth (as well as how essential it is for analysing retirement resources to measure all forms of wealth). Were individuals to finance retirement from their pension alone, almost half would be predicted to retire onto an equivalised annual income of less than £10,000. If we assume instead that individuals use their pension, all other wealth and half of their housing wealth to provide retirement incomes, then the proportion retiring onto less than £10,000 per year would fall to less than a third.

### Differences in family circumstances

The distribution of future retirement resources for today's fifty year olds is an object of direct policy interest in itself. But when thinking about the 'adequacy' of these resources and their implications for future wellbeing, we have to look at this distribution in the context of the many other ways in which individuals in their fifties are different and the changes that will occur between now and their retirement.

Table 10.2 uses data from the 2006 wave of ELSA to document heterogeneity in family circumstances among 50-64 year olds split by five-year age bands. It shows that the fifties are already a time of considerable diversity and, moreover, will be a time of considerable demographic and family change.

In the next ten years, most individuals will experience their children leaving home, the arrival of grandchildren and the loss of one or both parents. Yet there are still substantial groups for whom some of these events have happened already – and some for whom they still will not have happened ten years from now.

That such demographic and family transitions will occur will surprise no one: most individuals with children will expect their children to leave home and one day to have grandchildren; and all individuals will expect their parents to die at some point. The key issue for research is when these events will occur, under what circumstances and with what consequences.

Of particular concern are the likely consequences of these events for the demands placed on individuals in terms of family transfers, financial support and time spent providing help or care. Such intergenerational issues are key components of current policy debates about social care, the broader patterns of state support for older people and inheritance taxation. They are also central to such issues as young people's first steps onto the property ladder.

### Differences in health prospects

It is not just family circumstances that will change for people in their fifties, but individual circumstances too. While rates of disease and ill health are surprisingly low among those in their fifties and early sixties in comparison with the United States (Banks et al, 2006), the 1958 cohort has now reached the point where the prevalence of diseases will begin to rise systematically and levels of cognitive and physical functioning will begin to decline.

Breeze et al (2006) use ELSA data to show that the proportion of individuals with no major health conditions falls from over half in the early fifties to below one third by sixty. Major conditions are defined as angina, myocardial infarction, stroke, heart failure, heart murmur, abnormal heart rhythm, diabetes, glaucoma,

**Table 10.2: Intergenerational linkages, by age**

	50-54	55-59	60-64	All 50-64
Percentage of all individuals who have:				
Both parents alive	20.8%	9.0%	2.3%	11.0%
Only mother alive	33.5%	27.9%	16.6%	26.4%
Only father alive	9.0%	6.6%	3.2%	6.4%
Neither parent alive	36.7%	56.5%	77.8%	56.3%
	100%	100%	100%	100%
Percentage of those with children alive who have:				
Children still in household	65.3%	34.9%	20.7%	40.3%
Children not in household	34.7%	65.1%	79.3%	59.7%
	100%	100%	100%	100%
Percentage of those with children alive who have:				
No grandchildren	65.2%	42.7%	24.8%	44.5%
Grandchildren in household	1.8%	1.1%	2.1%	1.6%
Grandchildren not in household	33.0%	56.2%	73.1%	53.9%
	100%	100%	100%	100%

Source: Authors' calculations from 2006 ELSA data

## The wealthiest and the least wealthy are least likely to be in work now and have the lowest expectations of being in work at sixty

diabetic eye disease, macular degeneration, cataract, chronic lung disease, asthma, arthritis, osteoporosis, cancer (excluding primary skin cancer) and Parkinson's disease.

It is perhaps in these rates of decline that we will see the most heterogeneity in the cohort. For some, levels of health, vitality and function will continue virtually unchanged for many years. For others, ill health and disability will occur relatively soon.

Coupled with the revelation of information on their parents' longevity, the fifties are therefore likely to be a time of considerable learning about future prospects for health and functioning. Individuals will update their expectations and plans as they get (or do not get) certain health conditions, become healthier (or less healthy) than their peers, and observe the health and longevity status of their parents at older ages.

### Past choices, future outcomes

As expectations of future economic opportunities, health and functioning change, and information on intergenerational demands and potential resources become known, individuals will need to make adjustments to one or more of the following: the level of economic resources set aside for retirement, intended retirement ages, intended bequests and/or expected consumption levels in retirement. To make things more complicated, levels of health and functioning will also affect wage opportunities in the labour market and the level of needs in terms of social and family support.

In short, many formative lifecourse events have happened by the time people reach their fifties, and choices about education, training, health behaviours, family formation and employment have been made. But it is only from the fifties onwards that the full consequences of these past choices will emerge.

The raw ingredient of good policy analysis in this area is an understanding of the interlinked nature of economic, social, family and health outcomes and the distinction between the causes and consequences of lifecourse events in these domains.

Since individuals' choices are made in the context of forward-looking behaviour – for example, individuals choose to stay in work in anticipation of having to fund a long and active retirement – separating cause from consequence can pose problems of analysis. Analysis can also be complicated by the fact that earlier life events may be mere indicators of other unobserved factors as opposed to causal triggers in their own right. So it is essential to have good data at the individual, household and family level as a concrete basis for empirical analysis.

What is clear from the diversity of circumstances of people in

their fifties and early sixties is that it is necessary to measure all aspects of individuals' changing experiences – health, family, social and economic – alongside their own expectations of future circumstances. ELSA aims to do this, with detailed and comprehensive measures in all four domains and quantitative measures of expectations, which will provide the opportunity for more structured analysis of lifecourse trajectories.

In a simple example, ELSA data on expected employment patterns at age 60 show exactly the same pattern over the wealth distribution as actual employment rates of older groups: it is the wealthiest and the least wealthy who report the lowest expectations of being in work (Banks, 2005). Such measurements should be encouraged in the birth cohort studies as their members get older.

### Future research on ageing

For researchers working on issues of 'ageing', the 1958 cohort is moving into a time when it will become an important resource. ELSA provides detailed information across all relevant dimensions of the ageing process after fifty, but ageing begins at birth and many of the choices and events that determine subsequent trajectories occur early in life and so are only indirectly measured.

The 1958 cohort and the other cohort studies provide a crucial missing link: direct observations and measurements taken over the entire lifecourse. The scientific value of the data will be huge as the cohort moves into and through their retirement.

Understanding Society, the UK's new longitudinal household study will fill a different gap by making it possible to look at the broad spectrum of contemporaneous differences between young and old populations and to monitor how these change over time. To the extent that these two studies can develop measures comparable in scope and precision to those in the ELSA data, the UK will have a truly world-class evidence base with which to study ageing.

In summary, people in their fifties are the living proof of the inter-relatedness of lifecourse trajectories in economic, social, family and health outcomes. This is the age at which circumstances in all these domains are beginning to change, and at different rates for different people.

The 1958 cohort are already very diverse as they reach their fiftieth birthday and will only get more so as they age further. Evidence from ELSA suggests some ways to look at this diversity and some dimensions along which major differences might be expected to be apparent. For a more precise picture, we will have to wait for future data on this cohort to become available.



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# The Centre for Longitudinal Studies

The Centre for Longitudinal Studies (CLS) is a resource centre of the Economic and Social Research Council (ESRC), based at the Institute of Education, University of London.

CLS houses three of Britain's internationally-renowned birth cohort studies:

- 1958 National Child Development Study (NCDS)
- 1970 British Cohort Study (BCS70)
- Millennium Cohort Study (MCS)

The studies involve multiple surveys of large numbers of individuals from birth and throughout their lives. They have collected information on education and employment, family and parenting, physical and mental health, and social attitudes. Because they are longitudinal studies that follow the same groups of people throughout their lives, they show how histories of health, wealth, education, family and employment are interwoven for individuals, vary between them and affect outcomes and achievements in later life.

CLS provides support and facilities for those using data from the three studies, as well as conducting research using the cohort data, with a special interest in family life and parenting, family economics, youth lifecourse transitions and basic skills.

Further information about all three birth cohort studies and about the work of CLS can be found at:  
<http://www.cls.ioe.ac.uk>



