

\*\*\*\*\*  
\*  
\*           A REVIEW OF CHILD HEALTH IN THE 1958 BIRTH COHORT:           \*  
\*                           NATIONAL CHILD DEVELOPMENT STUDY           \*  
\*  
\*\*\*\*\*

by

Chris Power

Child Health Monitoring Unit  
Department of Paediatric Epidemiology  
Institute of Child Health  
London

This is a draft paper and comments are welcome.  
The views expressed are those of the authors only.  
Please do not quote or reproduce this paper without  
the permission of the authors.

Social Statistics Research Unit  
City University  
Northampton Square  
LONDON EC1V 0HB  
MARCH 1991

NCDSUSGWP34:CP;210391

National Child Development Study User Support Group Working Paper Series

This Working Paper is one of a number, available from the National Child Development Study User Support Group, which report on the background to the Study and the research that has been based on the information collected over the years. Other Working Papers in the series are listed below.

---

No.	Title	Author(s)	Date
1.	The National Child Development Study: an introduction to the background to the Study and the methods of data collection	Peter Shepherd (SSRU)	October 1985
2.	Publications arising from the National Child Development Study	NCDS User Support Group (SSRU) & Librarian, National Children's Bureau	October 1985
3.	After School: the education and training experiences of the 1958 cohort	Ken Fogelman (SSRU)	October 1985
4.	A Longitudinal Study of Alcohol Consumption Amongst Young Adults In Britain: I Alcohol consumption and associated factors in young adults in Britain	Chris Power (SSRU)	December 1985
5.	A Longitudinal Study of Alcohol Consumption Amongst Young Adults In Britain: II A national longitudinal study of Alcohol consumption between the ages of 16 and 23	Mayer Ghodsian & Christine Power (SSRU)	December 1985
6.	A Longitudinal Study of Alcohol Consumption Amongst Young Adults In Britain: III Childhood and adolescent characteristics associated with drinking behaviour in early adulthood	Mayer Ghodsian (SSRU)	December 1985
7.	Report on the longitudinal exploitation of the National Child Development Study in areas of interest to DHSS	Mildred Blaxter (Univ of Cambridge)	April 1986

---

National Child Development Study

User Support Group

Working Paper No 34

A REVIEW OF CHILD HEALTH IN THE 1958 BIRTH COHORT:  
NATIONAL CHILD DEVELOPMENT STUDY

by

Chris Power

Child Health Monitoring Unit  
Department of Paediatric Epidemiology  
Institute of Child Health  
London

**A review of child health in the 1958 birth cohort:  
National Child Development Study**

by

Chris Power

Child Health Monitoring Unit  
Department of Paediatric Epidemiology  
Institute of Child Health  
London

## Summary

In the week 3rd-9th March, 1958, 98% of all births in England, Scotland and Wales (approximately 17,000) were studied in the Perinatal Mortality Survey. The follow-up of surviving children, known as the National Child Development Study, comprises four major sweeps at ages 7, 11 16 and 23. Medical examinations were conducted at each age, except at 23 when health was self-reported. Details of the child's family background and socio-economic circumstances were recorded together with assessments of their social development and educational attainment. Seventy-six percent of the target population were interviewed at age 23.

The health of subjects in the 1958 cohort has been described in over 200 publications but there is no comprehensive account of findings from birth to age 23. This overview attempts to redress this. As new data are gathered from the study subjects at age 33, opportunities will exist to investigate associations between childhood factors and health in mid-life. Data on their partners and children will be included, allowing studies of inter-generational and family health. Further indications of changing illness patterns will be possible from comparisons with data collected on earlier and later born cohorts.

## Introduction

In the late 1950s there was increasing concern about the perinatal mortality rate which had fallen during and immediately after the second world war but which subsequently remained static. Hence, in 1958 when the rate was 35 per 1000 births, the National Birthday Trust sponsored a Perinatal Mortality Study (PMS) to investigate the social and obstetric factors associated with stillbirth and early death <sup>1</sup>. The terms of reference of the study were 'to provide information of value upon a number of aspects relating to the safety and health of mother and infant, including the possible effects of place of confinement and with special reference to perinatal mortality'. The PMS was the second of three large national birth surveys conducted in Britain: the first had been undertaken in 1946 <sup>2</sup> and the third was in 1970 <sup>3</sup>. Each formed the basis for continuing studies of their original study children and each has contributed to medical knowledge. This review is confined to the particular contribution of the study begun in 1958, subsequently known as the National Child Development Study (NCDS).

All births in England, Scotland and Wales in the week 3-9th March, 1958 were investigated by means of a questionnaire completed by the attending midwife, giving details of social and family background, past obstetric history, antenatal care and abnormalities during pregnancy, duration and abnormalities of labour, analgesia and anaesthesia, as well as sex, weight, progress, management and outcome (live birth, stillbirth or neonatal death) of the infant. Information was obtained on some

98% of total births (approximately 17,000) in that week.

Before the survey was conducted it was known that low birthweight (2,500 grams or less) was associated with high perinatal mortality. The PMS confirmed this and in addition, identified several new categories of perinatal risk, such as bleeding in early pregnancy and elevated blood pressure, especially in association with proteinuria. U-shaped variations in risk with maternal age and parity were also described <sup>1</sup>. During the survey, 49.1% of women had hospital deliveries, 12.1% were delivered at "isolated" general practitioner units and 36.1% at home. Since then hospital births have become more common, so that in 1988 97.8% of babies were delivered in NHS hospitals, increasing to 99% if all other hospitals are included. In the PMS care and delivery in a NHS consultant unit were associated with least risk of death for the infant <sup>4</sup>.

Prominent among the initial findings was the pronounced effect of family and social circumstances on perinatal mortality. Notable also was the effect of smoking: smoking 10 cigarettes a day or more in the second half of pregnancy increased the perinatal mortality rate by 28% and decreased birthweight by an average 170g compared with non-smokers <sup>5</sup>.

A detailed account of the PMS is contained in two major texts by Butler & Bonham <sup>1</sup> and Butler & Alberman <sup>5</sup>. These are supplemented by numerous publications which explore specific topics such as the clinical and pathological causes of neonatal deaths and the optimum interval between pregnancies <sup>6-32</sup>.

## Method of follow-up

There have been four major follow-up studies of the surviving children in 1965, 1969, 1974 and 1981, that is at ages 7, 11, 16 and 23. Immigrants to Britain born during the same week in 1958 were incorporated into the survey at each sweep except at age 23.

Methods of data collection in the first three follow-ups include an examination of each study child by the school medical officer, an interview with the parents by a local health visitor, a questionnaire completed by the child's teacher, a number of educational tests and (at age 16) an individual questionnaire administered to the study child. The 23 year survey differed from earlier sweeps in that it consisted exclusively of an interview with the individual subject. The appendix summarises the information collected.

The cohort was re-traced at each sweep. For the 7, 11 and 16 year sweeps the majority of children were contacted through their school. A variety of other sources - local authorities and social services - were used to locate the remainder. Similar sources were used at age 23, together with the subjects latest recorded address. Table 1 indicates the response achieved at each age. Inevitably sample attrition has occurred, but despite this the representativeness of the study has been maintained, in general, through to the most recent sweeps. Few serious biases have been found; the largest biases are for certain disadvantaged groups such as for those with no male head of household at birth



who are under-represented in later sweeps <sup>33,34</sup>.

A further follow-up of the entire cohort is planned for age 33, together with an additional questionnaire that will be administered to one third of the subjects who have children. Most questions in this additional questionnaire focus on the children born to the 1958 cohort <sup>35</sup>.

Two main texts describe the health, socio-demographic characteristics and educational attainment of the cohort in childhood and adolescence <sup>36,37</sup>. Several general descriptions are also available <sup>38-70</sup>, some of which give overviews of health at different ages <sup>71-76</sup>. The study provides valuable information on the prevalence and incidence of particular conditions and in some instances it is possible to examine trends from comparison with the 1946 and 1970 <sup>58,77-80</sup> cohorts. However, the main strength of the longitudinal design is that it allows identification of predictors of particular conditions and their sequelae. Findings relating to health are summarised here.

## Physical measurements

### Birthweight

After the initial survey had demonstrated that low birthweight carried an excess risk of perinatal mortality, further work revealed additional adverse mental and physical outcomes associated with low birthweight such as squint <sup>81-83</sup>.

Subsequently, research effort continued in an attempt to identify the determinants of preterm delivery and fetal growth. For example, further analyses on the link between smoking during pregnancy and low birthweight contributed to the resolution of a controversy generated by initial PMS findings <sup>84-86</sup>. Of particular importance was the demonstration that the smoking association held even when possible mediating factors such as social class, maternal age and parity were accounted for <sup>87</sup>. From a comparison of birthweight and birthweight for gestation in the 1958 and 1970 cohorts it is also apparent that there has been little change in their distributions <sup>88</sup> and associated influences <sup>89,90</sup>.

More recently, it has been possible to examine birthweight in the 1958 cohort's own children. Among this group, low birthweight was strongly associated with mother's social class both in the past (ie at her birth in 1958) and in the present (ie at the most recent follow-up in 1981) <sup>91</sup>. Figure 1 is taken from another study of intergenerational influences, which shows that the birthweight of children born to women in the 1958 cohort increases with the woman's own birthweight for gestational age <sup>92</sup>. Intergenerational influences on birthweight are likely to provide a major focus for future work given the growing interest in the impact of the prenatal environment on subsequent health. Some such inter-relationships have been explored for adult stature, as discussed below.

Height and weight.

Heights and weights of the cohort were monitored throughout

childhood to early adulthood; measurements were obtained during the school years and self-reports at age 23. These data have been used to examine the determinants of height during childhood (eg <sup>93</sup>). In a comprehensive analysis by Goldstein <sup>94</sup> height at age 7 increased with increasing maternal height, social class and birthweight; and with decreasing parity and number of younger siblings. Children of mothers who smoked during pregnancy were shorter on average than children of mothers who did not smoke; and average height was also shorter among children of younger mothers (ie under 25 years) than among children of older mothers. Similar findings have been reported for adult stature <sup>95</sup> in that height at age 23 increased with birthweight and parental height.

Long term effects of mother's smoking during pregnancy have also been studied. Smoking was associated with height (and attainment in reading and maths) of offspring at age seven <sup>96,94</sup>, although the effect was reduced after allowing for other factors, such as birthweight. By age 16, associations between mother's smoking during pregnancy and height of offspring were weaker <sup>97,98</sup> but only when prior adjustment was made for birthweight. Thus the effect of mother's smoking during pregnancy on subsequent adult stature is probably mediated through its influence on birthweight.

A consistent finding has been the variability of height with social circumstances, including housing <sup>99</sup>, family size <sup>100</sup> and region of residence <sup>101</sup>. As in other British samples, height in the 1958 cohort is shorter on average for lower social classes (classes IV and V). The class gradient was evident by

age 7 <sup>94</sup> and maintained through to early adulthood <sup>102</sup>. When origins of adult social class differences in stature were examined in detail, parents' heights, birthweight and early socio-economic environment were seen to be of key importance <sup>34</sup>. It was apparent that height-related social mobility had occurred but that this did not exert a major influence on class differences in height at age 23 <sup>34,102-104</sup>.

Subjects in the 1958 birth cohort were shown to be taller on average than their parents <sup>95</sup> and also taller than the earlier born 1946 cohort <sup>105</sup>. However, using data from the 1958 and 1946 cohort studies it is possible to investigate secular trends in height from the turn of the century by combining data for parents and offspring in both studies. These data have been particularly valuable in demonstrating time trends in sex and social class differences in average height: women's and men's heights have diverged because the average height of women has not increased at the same rate as that of men; while differences between social classes have shown only small fluctuations <sup>105</sup>.

Physical status in the cohort is also monitored through measurement of weight, although this has usually been considered together with height, in the assessment of obesity <sup>106,107</sup>. Given the importance of obesity in childhood and later in life, it was disturbing to find that overweight was nearly twice as common among 7 year olds in the 1958 cohort than in the 1946 cohort, although the difference was less by adolescence <sup>108</sup>. It has proved difficult to predict which children would go on to become obese teenagers <sup>109</sup>, although those from lower social class backgrounds appeared to be more susceptible to obesity by

early adulthood <sup>110</sup>. Clinical assessment at age 16 proved to have poor agreement with indices of weight-for-height, especially in girls <sup>111</sup>.

Another aspect of physical status that has been studied is sexual maturation <sup>112-114</sup>. Data included in the study allow some investigation of mechanisms regulating the timing of maturation. In girls, for example, weight adjusted for height was found to be unimportant in relation to age of menarche, suggesting that in well-nourished populations menarche is largely regulated by genetic factors and that nutrition is less important <sup>114</sup>.

#### Chronic illness

Childhood chronic illness can be identified from a wide range of separate questions and measurements, many of which were repeated at each sweep. Most publications from the study deal with specific conditions, although a few consider chronic illness in general. In an example of the latter, chronic illness at age 7 was shown to be associated with a heavier burden of ill-health from other conditions both during childhood and subsequently at age 23 <sup>115</sup>. Subjects with a chronic physical illness at any time during childhood had increased risk of psychosocial problems such as poorer emotional well-being and greater social isolation <sup>116</sup>. More usually, however, the natural history, predictors and consequences of specific conditions have been examined.

Disturbances in vision, hearing and speech have been studied in some detail. For example, even when cerebral palsied, clumsy and mentally retarded children were excluded, children with squints tended to have reading problems and difficulties in copying designs <sup>83</sup>. Information on distant visual acuity at ages 7, 11 and 16 <sup>117-119</sup> shows that many children with normal visual acuity at one screening had defects at a later screening <sup>120</sup>. At age 16, 18% had been prescribed glasses, but when these children were tested as part of the survey at that age, 27% were found to have normal unaided visual acuity or only a minor defect, possibly causing them to reject their glasses more frequently than others <sup>121</sup>. Myopic children at 11 and 16 achieved higher academic attainments than their normal sighted peers even when allowance was made for other potential influences <sup>122</sup>. Some have interpreted this as suggesting that reading is more likely to affect myopia rather than vice versa and that any causal influence could continue beyond childhood into adolescence <sup>123</sup>.

Hearing loss by age 7 was identified using audiograms <sup>124</sup> and found to be associated with reduced scholastic achievement <sup>125,126</sup> although differences did not persist to age 11 <sup>127</sup>. Subsequently, between 11 and 16 years, thresholds of hearing loss increased in the study sample, signifying a decline in hearing acuity. This occurred at a relatively greater rate in children from manual social class backgrounds <sup>128,129</sup>. It was suggested that while the class difference in early childhood could be due, in part, to the greater prevalence of middle ear infections and other ear conditions among children from manual class backgrounds, during adolescence other influences such as

exposure to highly amplified music might be operating.

Children with severe speech difficulties at age 7 also had relatively poor school performance <sup>126,130,131</sup>. Follow-up to age 16 indicated the likelihood of continued backwardness in scholastic achievement <sup>132</sup>. Children with speech disorders were likely to have some degree of hearing loss <sup>133-135</sup>.

Another chronic condition identifiable from data collected is diabetes. Data were used together with those from the 1946 and 1970 cohorts to examine whether the incidence of juvenile-onset diabetes mellitus was increasing. Initially it appeared that there was an increase during childhood <sup>136,137</sup> but after subsequent follow-ups of the 1946 and 1958 cohorts, no increase was evident <sup>138</sup>.

Asthma has also been studied extensively because the cohort provides a rare opportunity to investigate the natural history, predictors and co-morbidity of this important condition <sup>139</sup> <sup>140-143</sup>. A recent study of the link between chest illnesses in childhood and later respiratory symptoms, showed that both pneumonia and asthma or wheezy bronchitis up to age 7 were associated with a significant excess in the prevalence of chronic cough at age 23 after controlling for current smoking <sup>144</sup>. When recent asthma and wheezy bronchitis (between ages 16 and 23) were considered, it was found that the excess risk was largely attributable to an association of cough and phlegm at 23 with recent asthma or wheezy bronchitis. This was interpreted by Strachan et al <sup>144</sup> as supporting the theory that respiratory disease persisting throughout childhood and adolescence may owe

more to the disturbances of airways function associated with asthma than to structural damage to the lung caused by respiratory infection in infancy. Asthma and wheezy bronchitis were not differentiated by social class or housing tenure either during childhood or in early adulthood <sup>34,139,140</sup>; whereas respiratory symptoms at age 23 (winter cough or phlegm) had a pronounced class gradient, with more frequent reporting of symptoms in manual classes <sup>34</sup>.

Studies of other chronic conditions, such as cerebral palsy and epilepsy, have been less extensive. Data from the 1958 and 1970 cohorts showed that the prevalence of cerebral palsy has remained fairly constant, although more later born children had survived to age 10. No evidence was found in support of an etiological influence of obstetric factors but the numbers involved were very small <sup>145</sup>. Prevalence estimates for convulsive disorders were also derived from NCDS but in the case of epilepsy few clues as to causation could be identified <sup>146</sup> 147-151.

Other enquiries have focused on children having an ascertained handicap. Some children included in this group suffer from conditions mentioned above, such as cerebral palsy. As table 2 shows the majority were, in the terminology used then, educationally subnormal. Prevalence and nature of ascertained handicap have been reported on several occasions <sup>152-157</sup>. From an early stage in the study's history efforts were made to inform policies on early selective screening for handicap against a background of disappointment with the 'at



risk' registers of the 1960s 158-160. It was shown that children at risk of developing handicaps not visible at birth could be identified from their perinatal circumstances (such as being a fifth or later born child or being delivered abnormally) and that resources could be targeted more efficiently on the basis of this information 51,160,161.

Subsequently, a special enquiry into the educational performance and transition to work of handicapped children was commissioned by the Warnock Committee. This involved contacting a sub-sample of the cohort, including children with handicaps and some without. The results suggested that the disadvantage suffered by handicapped children had been hugely underestimated 162-166. For example, a disproportionate number of handicapped youngsters who had obtained work were in lower status occupations (table 3). The handicapped were also less likely to have a job (table 4). Thirty-three percent of handicapped young people had been out of work for 6 months or more in the 2 years since leaving school, compared with just 3% of non-handicapped young people. On the basis of this work it was recommended that major policy initiatives should be taken to counteract such disadvantages.

#### Psychological health

Only a small proportion of children were reported by their parents to have seen a specialist at a child guidance clinic for an emotional or behavioural problem (eg 2.6% by age 16) or at hospital (1.2% as outpatients and 0.4% as inpatients) 71,167.

About 11% of children were bedwetting at age 7 and approximately 5% at age 11. While there were no sex differences at 7, boys outnumbered girls by 2 to 1 at age 11. Bedwetting at age 11 was more common in children from lower social classes, in those with older siblings, and in those living in overcrowded homes. It was also strongly associated with poor behaviour at school and home 168.

Measures of behaviour were obtained from teachers and parents. The scales used in the study - the Bristol Social Adjustment Guides (BSAG) and Rutter behaviour scales - were designed to detect maladjustment, unsettledness and other emotional problems in children of school age; they focus on behaviour in various contexts. Some methodological problems of these measures have been investigated in this large population sample 169.

Adjustment or behavioural difficulties varied by sex, social class and region 170-175. At age 7, for example, poorer adjustment at school (based on the BSAG) was more common among boys, and among children from lower social classes. Certain disadvantaged groups (eg. children in families on low incomes as defined by those receiving state benefits - supplementary benefits and family income support) appear to be at greater risk of poor behaviour 176. It is important to note that poor or "deviant" behaviour did not necessarily persist throughout childhood and adolescence; most often poor behaviour appeared to be transient 177. However, poor rating on the behaviour scales is, perhaps not surprisingly, predictive of poor school attainment 178.

NCDS also provides evidence to suggest that particular child health problems may be associated with increased risk of poor adjustment. Such findings have been reported, for example, for chronic disorders in general <sup>116</sup> and for asthma <sup>141</sup> and speech disorders <sup>74</sup> in particular.

Psychological health of cohort members at age 23 was assessed by the Malaise Inventory, which is a checklist of symptoms such as anxiety, irritability, depressed mood and psychosomatic illness. At this follow-up individuals also reported whether they had received treatment for a psychological problem since age 16. Both indicators of psychological well-being showed an excess of problems in women compared with men; the pattern found in most population studies. There was also an excess of problems in lower social classes which was evident using either of these measures, although discrepancies were larger using the Malaise Inventory <sup>102,179</sup>. A large part of the class differences were accounted for by early socio-economic circumstances and also by education and post-school experiences such as unemployment and having a child by age 23, even after allowing for adolescent psychological health <sup>34,180</sup>.

#### Accidents

Eighty accidental deaths were among the 282 deaths (including perinatal deaths) known to have occurred by the time the surviving cohort was age 23 <sup>181</sup>. In addition there has been substantial injury related morbidity, affecting for example,

16.7% of girls and 22.7% of boys by age 7 <sup>115</sup>. Thus, several studies used the comprehensive information available in the study to seek explanations for these events in childhood and early adulthood.

In the earliest publications, disadvantaged 11 year-olds (ie children in the poorest housing, low income and unfavourable family situations) were shown to be more likely than their peers to have had an accident followed by hospital admission or casualty department care. This difference was largely accounted for by accidents at home, where the most common type of injury by this age was a scald or burn <sup>182,183</sup>. Risks associated with home environment diminished for disadvantaged children relative to others by age 16.

When road traffic injuries occurring between ages 7 and 16 were investigated against a wide range of potential influences, five remained significant in multivariate analyses: fidgety, abnormal behaviour, overcrowding at home, being placed in the care of the local authority and family difficulties as identified by the parents <sup>184</sup>. The relative lack of risk associated with the physical or developmental attributes of the child itself led Pless et al <sup>184</sup> to conclude that community based environmental strategies were preferable to those that aimed at identifying "high risk" children and modifying their behaviour.

Evidence from NCDS also suggests that children experiencing frequent accidents between 11 and 15 were at higher risk of accidents later on, that is between ages 16 and 23 <sup>185</sup>. Teenage

accidents, occurring at 15 and 16 years, were higher among those who had more conflict with their parents than in those who had less conflict <sup>186</sup>. Accidents in the early adulthood years were associated with recent life events such as separation or divorce, becoming unemployed, or having a miscarriage or abortion <sup>181</sup>.

#### Other illnesses

The successive cohort studies also contain information on other common childhood conditions such as eczema and hayfever. Reported prevalence of eczema increased from 5.1% (by age 6) among children born in 1946, to 7.3% (by age 7) among those born in 1958, to 12.2% (by age 5) in the 1970 cohort <sup>80</sup>. This could reflect secular changes in diagnosis or a real increase in the prevalence of the disorder. Both eczema and hayfever are more common in higher social classes and this association persists from childhood <sup>36</sup> to early adulthood <sup>34</sup>. Both conditions are associated with asthma <sup>139</sup>.

Although many of the conditions described so far may have led to absence from school for sickness, the majority of absences were for upper respiratory infections (colds, sore throats) and ear infections, headaches and migraine <sup>71,73,187</sup> <sup>188</sup>. At age 11, children living in disadvantaged circumstances (as defined above) had more absence from school because of ill-health compared with other children: 1 in 11 of disadvantaged children was absent for up to 3 of the 12 months preceding interview (compared with 1 in 25 of other children); while 1 in

50 were absent for more than 3 months (compared with 1 in 250) <sup>189</sup>. This difference was explained in part by a greater prevalence of minor infections (especially respiratory infections) among disadvantaged children. However, absences for more serious illnesses were also more common among disadvantaged children: 1 in 16 were reported to have had rheumatic fever, infectious hepatitis, meningitis or tuberculosis compared with 1 in 32 of other children <sup>189</sup>.

In addition to the studies of childhood illnesses, use has been made of data on handedness in the debate on the genetics of this characteristic <sup>190,191</sup>. Other work investigating the relationship between hand preference and ability revealed no major differences: non-right handedness was not associated with speech defects nor with writing productivity or syntactic maturity and only slight, but statistically significant associations emerged in relation to poor performance on certain standardised attainment and ability tests, and with the teachers assessment of poor control of hands <sup>192</sup>.

#### Use of services

From each stage of the study there is abundant evidence that the better off have made greater use of health services.

In the PMS upper social class women were more likely to have their baby in a hospital or GP unit than lower class women <sup>1</sup>. Subsequently, among their children, those who were disadvantaged (by poor housing, low income and unfavourable family

circumstances) were found to make less use of preventive health services: by age 7, 1 in 8 disadvantaged children had not been immunised for polio (compared with 1 in 40 in others); 1 in 7 was unprotected against diphtheria (compared with 1 in 30); and 2 out of 5 were unprotected against smallpox (compared with 1 in 5) <sup>189</sup>. At ages 11 and 16 disadvantaged children were less likely to have visited a dentist in the year prior to interview: 65% compared with 88% at age 16 <sup>182,183</sup>.

An exception to the general trend was for uptake of rubella vaccination. Overall, 71% of girls had received vaccination by 1974, at a time when there was a national campaign aimed at 11-14 year olds, but uptake was as low among girls from professional families (social classes I and II) as among those from unskilled manual (class V) backgrounds <sup>193</sup>.

Uptake of speech therapy was similar in all social groups <sup>131,194</sup> even though speech handicap was more common in children from manual class background than in those from non-manual families. Consequently, the poor long term prospects for children with speech handicap mentioned above <sup>132,195</sup> would have been more often experienced by children from manual class origins.

At each of the 7, 11 and 16 year follow-ups of the 1958 cohort parents reported any admission to hospital for which their child had stayed in overnight. Tonsillectomy was the most common reason for admission <sup>71,73,74,167,187</sup> affecting 20.8% of the cohort by age 16 <sup>71</sup>; circumcision was the second most important reason in boys, affecting 7.7% by age 16; while

appendicectomy was less common, affecting 5.2% by age 16. For each of these operations, the 1958 cohort rates were intermediate between those for the 1946 and 1970 studies, with rates declining overall <sup>77,79,196</sup>. Risk of having an appendicectomy was associated with lack of household amenities in the 1958 cohort. It has been argued that findings from the three cohorts support a hygiene etiology hypothesis, whereby young children who escape infection as a result of improvements in hygiene become more vulnerable to appendicitis when exposed to infections in later childhood or early adult life <sup>196</sup>.

#### Health-related behaviour

NCDS subjects were first asked about their own smoking when they were aged 16. Some of the findings reported by Pearson and Richardson <sup>197</sup> supplemented existing knowledge by showing that smoking was heavier among working-class than middle-class children; in children attending comprehensive or secondary modern schools compared with others; that frequency was related to parents' smoking; that smokers frequently argued with their parents about smoking; that smoking was closely related to availability of money and with social activities; and that school absence for certain respiratory problems was greater in smokers <sup>197,198</sup>.

Drinking habits were also reported by the cohort at ages 16 and 23. As with smoking, teenage drinking appeared to increase with the availability of funds and the extent to which individuals took part in social activities <sup>199</sup>. Frequency and



amount of alcohol consumption increased by age 23 but was only weakly associated with drinking in the teenage years <sup>200</sup>. Heavy drinking in early adulthood was not easily predicted <sup>201-203</sup> although some groups, such as those unemployed for six months or more, appeared to be more vulnerable.

While the cigarette and alcohol consumption of the 1958 cohort continues to be of interest, data pertaining to their parents is also informative, particularly in the assessment of changing smoking habits over time. Knowledge of such changes is especially valuable for a better understanding of recent national mortality statistics, as illustrated in an enquiry into the socio-economic distribution of lung cancer mortality <sup>204</sup>.

## Education

That health and education are closely related is evident from much of the work cited above. For example, particular medical conditions have implications for how education is conducted and for a child's subsequent attainment <sup>149,205</sup>. In some instances special education is required and much work has focussed on the need for and provision of such services <sup>206,207 208,209</sup>. Conversely, the education received by a child may affect his or her health and related behaviour. Some aspects of education, such as sex education, have been studied in NCDS to reveal where shortcomings exist <sup>210-213</sup>. However, a major part of research has concerned the influences - home and family, school and personal attributes - that affect educational performance and subsequent job choice <sup>188,214-267</sup>.

## Socio-economic and family circumstances

As with education, many examples of inter-relationships between socio-economic and family circumstances and child health have been mentioned in this review. A major research theme has been to establish how individuals fare, in a wider sense but including health, given their particular start in life. Hence, the fate of children has been investigated from the perspective of particular socio-economic circumstances 268-288 and potential adversities, such as being illegitimate 289,290 or in care 232,291,292, living in one-parent families 223,293-310, stepfamilies 311,312, adoptive families 313-316 or being born to young parents 317. Family stresses and relationships were examined in the cohort as a whole, as well as among special interest groups 318-320.

By age 23 when the most recent data were collected, many individuals had completed a number of important transitions, such as leaving school and starting work or training 321-325; and leaving their parents home to establish their own households 326. Some factors mediating in such transitions have been identified 327,328 and more are likely to be forthcoming. There are also many young adults for whom the transition period has been extended, for example by unemployment or further education. Meanwhile, just under one-third of men had married by age 23, 15% had become fathers; whilst over one half of the women had married and 30% become mothers.

## Methodological studies

Survey techniques and methods of data analysis have been refined in the process of researching this large population sample over time. While relevant issues are usually discussed in each paper using data from the study, several publications focus specifically on survey design and statistical analysis 250,329-336.

## Conclusions

This review illustrates the extent to which longitudinal data can be of value in the understanding of health problems of children. An additional strength of the study is the breadth of data available. As a population based study, it provides estimates of prevalence and incidence which are not dependent, as often the case, on health service use. Furthermore, time trends in the incidence and prevalence of various childhood conditions can be studied by comparing the NCDS with two other British cohort studies. This can be problematic because of changes in definitions, but often it is the best available data. These advantages facilitate research in an enormous number of subjects, some of which can only be referenced here.

The sweep proposed for 1991 when the cohort are age 33, will permit investigations into inter-relationships between health and other factors up to a later point in the life course. It will also extend the enquiry to partners and children of the 1958 study subjects. In addition, the study will continue to

contribute to medical knowledge by providing information on prevalence and incidence of particular physical and mental health problems.

#### Acknowledgements

I am grateful to the Wolfson Foundation for financial support; and to Eva Alberman, Barry Pless and colleagues in the Department of Paediatric Epidemiology, Institute of Child Health, who gave comments on an earlier draft of this paper.

Access to NCDS: For further information concerning NCDS contact Peter Shepherd, Social Statistics Research Unit, City University, Northampton Square, London EC1V OHB (071 253 4399).

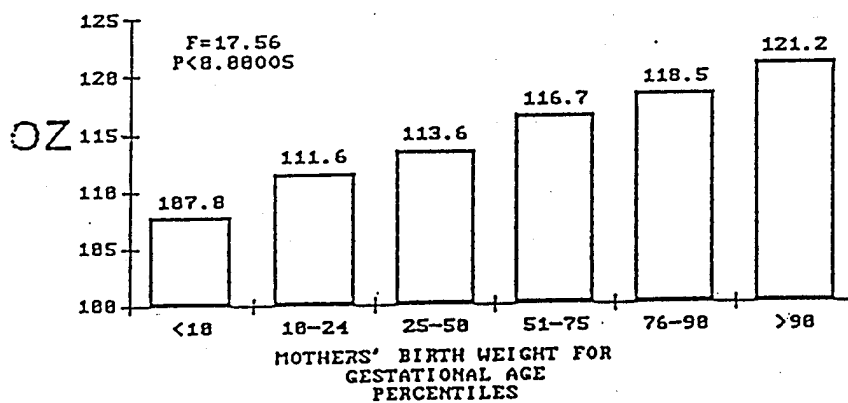
Table 1: Response to NCDS follow-ups

Cohort age (years)	Target* sample (n=100%)	Some data %	Refused %	Others without data %
Birth	17,733	98	-	2
7	16,883	91	1	8
11	16,835	91	5	4
16	16,915	87	7	6
23	16,457	76	7	17

\* Number from previous stage plus known immigrants, less known deaths and emigrations.

Source: Shepherd 337

Figure 1: Mean birthweight (ounces), total single live births by singleton mothers' relative intrauterine growth - 1958 cohort



Source: Alberman 92

Table 2: Formal ascertainment at 7, 11 and 16 years (rates per 1000)

Handicap category	At age 7 (N=14,032)*	At age 11 (N=15,275) <sup>+</sup>	At age 16 (N=14,299) <sup>+</sup>
Blind and partially sighted	0.3 ( 4)	0.6 ( 9)	0.6 ( 8)
Deaf and partially hearing	1.1 ( 15)	1.3 ( 20)	1.2 ( 17)
E.S.N (M)	5.3 ( 74)	17.4 (266)	15.3 (219)
E.S.N (S)	2.4 ( 34)	3.3 ( 51)	3.4 ( 49)
Epileptic	0.4 ( 6)	0.5 ( 7)	1.0 ( 15)
Maladjusted	0.6 ( 8)	3.1 ( 48)	5.0 ( 71)
Physically handicapped	1.8 ( 26)	1.8 ( 28)	2.0 ( 28)
Speech defect	1.9 ( 27)	0.3 ( 5)	0.8 ( 12)
Delicate	1.0 ( 14)	1.4 ( 22)	0.7 ( 10)
<b>Total</b>	<b>13.3 (187)</b>	<b>27.8 (425)</b>	<b>26.6 (379)</b>

\* Children for whom medical data available

+ Children for whom medical and/or educational data available

E.S.N. (M) = Educationally subnormal

E.S.N. (S) = Severely subnormal

Numbers of children are shown in parentheses

Source: Peckham and Pearson <sup>234</sup>, Pearson and Peckham <sup>199</sup>

Table 3: Social class of first job(%)

	Handicap -ped (n=170)	Special help (n=64)	Would benefit (n=51)	Non-hand -icapped (n=113)
Professional & intermediate	0	2	0	0
Skilled non-manual	12	22	22	33
Skilled manual	24	16	35	32
Semi-skilled	42	51	31	19
Unskilled	22	9	12	6

Table 4: Employment status at age 18 (%)

	Handicap -ped (n=251)	Special help (n=69)	Would benefit (n=54)	Non-hand -icapped (n=113)
Employed	48	78	72	66
Unemployed				
seeking work	19	13	20	4
not seeking work	8	4	2	0
Still at school or in further education	6	4	6	29
Adult training centre or sheltered education	15	-	-	-
Other	5	-	-	-

Source: Walker 302

#### Definitions

- i) Handicapped: those formerly ascertained as needing special education
- ii) Special help: those not formerly ascertained but receiving special help in school because of educational or mental backwardness.
- iii) Would benefit: those not in either of above, but who in the opinion of their teachers would benefit from special provision. Only a small proportion of this group had any physical problems. It was composed overwhelmingly of children with education and/or behaviour difficulties.
- iv) Non-handicapped: the remainder.

# APPENDIX 2

## Summary of the information collected during the Perinatal Mortality Survey (PMS) and the National Child Development Study (NCDS) 1958-1981

SOURCE	PMS:1958	NCDS1: 1965	NCDS2:1969	NCDS3:1974	NCDS4:1981
Parents	Social & Family background	Family size	)	)	
	Obstetric history	Parental situation	)	)	
	Antenatal care	Father's occupation	)	)	
	Abnormalities during pregnancy	Father's education	)	)	
	Length & abnormalities of labour	Mother's work	)	)	
	Analgesia & Anesthesia	Type of accommodation	)	)	
	Sex, management & outcome of infant	Tenure	)	)	
	Mother's smoking during pregnancy	Number of rooms	)	)	
		Household amenities	)As NCDS1	)As NCDS1 & 2	
		Periods 'In Care'	)	)	
		Hospital admissions	)	)	
		Clinic attendance	)	)	
		Medical history	)	)	
		Behaviour	)	)	
		Physical co-ordination	)	)	
		Adjustment to school	)	)	
		Separation from mother	Financial situation	)	
		Pre-school experience	Housing satisfaction	Child's future education & employment	
	Infant Welfare Clinic attendance	Satisfaction with neighbourhood			
Medical	<i>Birthweight</i> <i>Gestation</i>	Height	)	)	
		Weight	)	)	
		Head circumference	)	)	
		Tests & clinical assessments of motor co-ordination & laterality	)As NCDS1	)As NCDS1 & 2	
		Full clinical examination	)	)	
			Pubertal development	)	
School		School size and organisation)	)	)	
		School and parents	)	)	
		Teachers assessment of child's abilities, attainment & behaviour	)As NCDS1	)As NCDS1 & 2	[EXAMS: Details of entry and performance in public examinations were obtained from schools in 1978]
			)	)	Child's future education & employment
Subject		Southgate Reading Test	Reading comprehension test)		Employment & Unemployment
		Copying Designs Test	Mathematics	)As NCDS2	Apprenticeship & training
		Goodenough Draw-a-man Test	Comprehension Test	)	Education & qualifications since school
		Problem Arithmetic Test	General Ability Test	)	Literacy & numeracy
			Copying-designs Test	Questionnaire covering: School Education	Periods out of the labour force
			Short questionnaire on interest out of schools & educational aspiration	Further & higher education	Attitudes to school & work
			Essay describing their life at age 25	Future employment	Number, age & sex of all natural children
				Relationships with the family	Children's health
				Marriage & family plans	Marriage & cohabitation
				Leisure activities	Characteristics of partners
				Marriage/family plans	
				Contraceptive use	
				Housing	
				Family income & savings	
				Health, accidents & hospital admissions	
				Height & weight	
				Leisure & voluntary activities	
				Economic status of parents	
				Experience of 'Care' as a child	
				'Malaise Index'	
				[AREA DATA](*)	



## References

1. Butler NR, Bonham DG. Perinatal mortality. Livingstone, Edinburgh, 1963
2. Maternity in Great Britain. Oxford University Press; Oxford, 1948
3. Chamberlain R, Chamberlain G, Howlett B, et al. British births 1970. Vol 1: The first week of life. Heinemann Medical; London, 1975
4. Fedrick J, Butler NR. Intended place of delivery and perinatal outcome. British Medical Journal, 1978 1:763-765
5. Butler NR, Alberman E. Perinatal problems. Livingstone, Edinburgh, 1969
6. Butler NR. National survey of perinatal mortality: first results. British Medical Journal, 1961 i:1313-1315
7. Butler NR. Perinatal mortality survey under the auspices of the National Birthday Trust Fund. Proceedings of Royal Society of Medicine, 1961 54:1089-1092
8. Butler NR. Fatal coxsackie B myocarditis in a newborn infant. British Medical Journal, 1962 i:1251-1252
9. Butler NR. Perinatal mortality survey. British Medical Journal, 1962 ii:1463-1465
10. Butler NR, Claireaux AE. Congenital diaphragmatic hernia as a cause of perinatal mortality. Lancet, 1962 ii:1187
11. Butler NR. Complications of birth asphyxia with special reference to resuscitation. In: "The obstetrician anaesthetist and the paediatrician in the management of obstetrical problems", Barnett T, Joyce J, eds, Pergamon; Oxford, 1963
12. Butler NR. An analysis of data on "high risk" mothers in

relation to perinatal mortality. In: "Report on symposium on the role of obstetricians in maternal and child health programmes", World Health Organisation, 1965

13. Butler NR. Perinatal death. In: "Gestational age, size and maturity", Dawkins M, MacGregor WG, eds, Spastics Society/Heinemann, 1965

14. Butler NR. The problems of low birthweight and early delivery. Journal of Obstetrics and Gynaecology of British Commonwealth, 1965 vol. 72 no. 6

15. Alberman ED, Fedrick JM, Schutt WH. The hypoplastic left heart complex. Journal of Medical Genetics, 1967 4:83-87

16. Fedrick J. Comparison of birth weight/gestation distribution in cases of still birth and neonatal death according to lesions found at necropsy. British Medical Journal, 1969 iii:745-748

17. Fedrick J. Neonatal deaths - time of death, maturity and lesion. Biology of the Neonate, 1971 18:369-378

18. Fedrick J, Alberman E, Goldstein H. Possible teratogenic effects of cigarette smoking. Nature, 1971 231:529-530

19. Fedrick J, Butler NR. Accuracy of registered causes of neonatal deaths in 1958. British Journal of Preventive and Social Medicine, 1972 26:101-105

20. Mascie-Taylor C, Boldsen J. Assortative mating, differential fertility and abnormal pregnancy outcome. Annals of Human Biology, 1988 15:223-228

21. Mascie-Taylor C. Assortative mating in a contemporary British population. Annals of Human Biology, 1987 14:59-68

22. McManus I, Mascie-Taylor C. Human assortative mating for height: Non-linearity and heteroscedasticity. Human Biology, 1984 56:617-623

23. Tew M. Place of birth and perinatal mortality. Journal of

- the Royal College of General Practitioners, 1985 Aug
24. Mascie-Taylor CGN, McManus IC. Blood group and socio-economic class. *Nature*, 1984 309:395-399
  25. Mascie-Taylor CGN, Lasker EW. Migration and changes in ABO and Rh blood group clines in Britain. *Human Biology*, 1987 59:337-344
  26. Fedrick J, Butler NR. Certain causes of neonatal death, I: hyaline membranes. *Biology of the Neonate*, 1970 15:229-255
  27. Fedrick J, Butler NR. Certain causes of neonatal death, II: intraventricular haemorrhage. *Biology of the Neonate*, 1970 15:257-290
  28. Fedrick J, Butler NR. Certain causes of neonatal death, III: pulmonary infection (a) clinical factors. *Biology of the Neonate*, 1971 17:458-471
  29. Fedrick J, Butler NR. Certain causes of neonatal death, III: pulmonary infection (b) pregnancy and delivery. *Biology of the Neonate*, 1971 17:45-47
  30. Fedrick J, Butler NR. Certain causes of neonatal death, IV: massive pulmonary haemorrhage. *Biology of the Neonate*, 1971 18:243-262
  31. Fedrick J, Butler NR. Certain causes of neonatal death, V: cerebral birth trauma. *Biology of the Neonate*, 1971 18:321-329
  32. Fedrick J, Adelstein P. Influence of pregnancy spacing on outcome of pregnancy. *British Medical Journal*, 1973 4:753-756
  33. Goldstein H. A study of response rates of 16-year-olds in the National Child Development Study. In: "Growing up in Great Britain", Fogelman K, ed, Macmillan/National Children's Bureau, 1983
  34. Power C, Manor O, Fox AJ. Health and class: the early years. Chapman & Hall; London, 1991

35. Fox AJ. NCDSV: the cohort and their children. ESRC Data Archive Bulletin, 1987 36:8-10
36. Davie R, Butler N, Goldstein H. From birth to seven. Longman/National Children's Bureau, London, 1972
37. Fogelman K, ed. Growing up in Great Britain: collected papers from the National Child Development Study. Macmillan, 1983
38. Davie R. One week's births. British Science News, Spectrum, 1973 vol. 108
39. Davie R. Eleven years of childhood. Statistical News, 1973 22:14-18
40. Davie R. The longitudinal approach. Trends in Education, 1972 28:8-13
41. Davie R. Likely outcomes of longitudinal studies: National Child Development Study (1958 cohort). In: "Longitudinal studies in the social sciences", Wall WD, Williams HL, eds, Heinemann/Social Science Research Council, 1971
42. Davie R. Seven year olds in England. Special Education, 1966 55:9-11
43. Davie R. Summary of the National Child Development Study. National Bureau for Co-operation in Child Care, 1966
44. Davie R. Summary of the first report of the National Child Development Study. Forward Trends, 1967 2:5-13
45. Fogelman K. The National Child Development Study. Education, 1974 10:257
46. Fogelman K. Research feedback - Britain's sixteen year olds. Concern, 1976 21:28-31
47. Fogelman K. Exploiting longitudinal data: examples from the National Child Development Study. In: "Longitudinal studies in child psychology and psychiatry", Nicol AR, ed, Wiley, 1985

48. Fogelman K. Growing up in Great Britain. Australian Council for Educational Research/New Zealand Council for Educational Research, 1985
49. Fogelman K. The British experience: the 1946, 1958 and 1970 national cohorts. In: "American Educational Research Association Annual Meeting 1986", US Office of Education, 1986
50. Fogelman K, Wedge P. The National Child Development Study (1958 British cohort). In: "Prospective longitudinal research", Mednick SA, Baert AE, eds, OUP, 1981
51. Goldstein H. From birth to seven. Concern, 1972 10:6-12
52. Goldstein H. Physical factors and mental development. In: "Nutritional problems in a changing world", Hollingsworth D, Russell M, eds, Applied Science Publications, 1973
53. Hitchfield E. In search of promise. Longman/National Children's Bureau, 1974
54. Ives R. Informing the informants. Concern, 1981 40:9-10
55. Ives R. Your story. Concern, 1981 40:11-23
56. Ives R. How the hell should I know. Concern, 1982 44:22-26
57. Wedge P. The second follow-up of the National Child Development Study. Concern, 1969 3:34-39
58. Wadsworth MEJ, Peckham CS, Taylor B. The role of national longitudinal studies in the prediction of health, development and behaviour. In: "Monitoring child health in the United States: selected issues and policies", Walker DK, Richmond JB, eds, 1984
59. Shepherd P. The NCDS (1958) cohort at 20. Concern, 1980 37:20-24
60. Sandilands J. Portrait of a generation - how sweet is 16? Observer Colour Magazine, 1976 vol. 12 Sept
61. Davie R. The unequal start. Sunday Times Colour Supplement,

1972 4 June:25-31

62. Hart S. It's not all sweet sixteen for the children of the "fifties". Health and Social Services Journal, 1976 86:1660-1661

63. Wedge P. Access to data in the National Child Development Study. SSRC Newsletter, 1974 23:4-5

64. Pringle MK. Planning and programming for child care. In: "Selected papers on learning difficulties", Academic Therapy Publications; San Rafael, California, 1968

65. Pringle MK, Butler N, Davie R. 11,000 seven year olds. Longman/National Children's Bureau, 1966

66. Ross E. 16,000 home visits. Nursing Times, 1969 1511-1513

67. Pringle MK. The National Child Development Study (1958 cohort). Bulletin of British Psychological Society, 1965 July: 1-6

68. Pringle MK. National Child Development Study (1958 cohort). In: "Research relevant to the education of children with learning handicaps", College of Special Education, 1968

69. Pringle MK. Policy implications of child development studies. Concern, 1969 3:40-48

70. Goldstein H, Wedge P. The British National Child Development Study. World Health Statistics Report, 1975 28:202-211

71. Peckham C, Pearson R. Preliminary findings at the age of 16 years on children in the National Child Development Study (1958 cohort). Public Health, 1976 90:271-280

72. Pearson R, Peckham C. Preliminary findings. Concern, 1972 10:16-20

73. Pearson R, Peckham C. Preliminary findings at the age of eleven years on children in the National Child Development Study (1958 cohort). Community Medicine, 1972 127:113-116

74. Peckham C. A national study of child development:

- preliminary findings in a national sample of 11 year old children. Proceedings of Royal Society of Medicine, 1973 1: 93-106
75. Alberman E. The prevalence of congenital defects in the children of the 1958 cohort. Concern, 1969 3:29-33
76. Davie R. Socio-biological influences on children's development. In: "Determinants of behavioural development", Monks FJ, ed, Academic Press, 1972
77. Golding J, Fogelman K. Are Britain's children getting healthier? Paed. Reviews & Communications, 1989 3:235-245
78. Chilvers C, Pike MC, Forman D, et al. Apparent doubling of frequency of undescended testis in England and Wales in 1962-81. Lancet, 1984 ii:330-332
79. Calnan M, Douglas J, Goldstein H. Tonsillectomy and circumcision: comparisons of two cohorts. International Journal of Epidemiology, 1978 7:79-85
80. Taylor B, Wadsworth J, Wadsworth MEJ, et al. Changes in the reported prevalence of childhood eczema since the 1939-45 war. Lancet, 1984 ii:1255-1257
81. Goldstein H, Peckham C. Birthweight, gestation, neonatal mortality and child development. In: "The biology of human fetal growth", Roberts DF, Thomson AM, eds, Taylor & Francis, 1976
82. Peckham C, Butler N, Frew R. Medical and social aspects of children with educational difficulties. In: "Growing up in Great Britain", Fogelman K, ed, Macmillan/National Children's Bureau, 1983
83. Alberman E, Butler NR, Gardiner PA. Children with squints at seven years - a handicapped group? The Practitioner, 1971 206:501-506
84. Goldstein H. Smoking in pregnancy and the health of the

- baby. *Mother and Child*, 1972 March/April:10-11
85. Goldstein H. Smoking in pregnancy: the statistical controversy and its resolution. In: "Proceedings of 3rd World Conference on Smoking and Health", New York, 1975
86. Goldstein H. Smoking in pregnancy: the statistical controversy. *British Journal of Preventive and Social Medicine*, 1977 31:13-17
87. Butler NR, Goldstein H, Ross EM. Cigarette smoking in pregnancy: influence on birth and perinatal mortality. *British Medical Journal*, 1972 i:127-130
88. Alberman ED. Sociobiologic factors and birthweight in Great Britain. In: "The Epidemiology of prematurity", Reed DM, Stanley F, eds, Urban and Schwarzenberg, 1977 pp. 145-156
89. Peters T, Harragin R, Golding J. Do the maternal and social factors related to birthweight change over time? *Health Visitor*, 1985 58:226-227
90. Peters TJ, Golding J, Butler NR, et al. Plus ca change: predictors of birthweight in two national studies. *British Journal of Obstetrics and Gynaecology*, 1983 90:1040-1045
91. Joffe M. Social inequalities in low birthweight: timing of effects and selective social mobility. *Social Science and Medicine*, 1989 28:613-619
92. Alberman ED. Epidemiology. In: "Fetal growth: Proceedings of the Twentieth Study Group of the Royal College of Obstetricians and Gynaecologists", Sharp F, Fraser RB, Milner RDG, eds, Royal College of Obstetricians and Gynaecologists; London, 1989
93. Wedge P, Alberman E, Goldstein H. Health and height in children. *New Society*, 1970 16:1044-1045
94. Goldstein H. Factors influencing the height of seven-year-old children. Results from the National Child Development Study



- (1958 cohort). *Human Biology*, 1971 43:92-111
95. Alberman E, Filaleti H, Williams S, et al. Early influences on the secular change in adult height between the parents and children of the 1958 birth cohort. *Annals of Human Biology*, 1991 (in press)
96. Butler N, Goldstein H. Smoking in pregnancy and subsequent child development. *British Medical Journal*, 1973 iv:573-575
97. Fogelman K. Smoking in pregnancy and subsequent development of the child. *Child: Care, Health & Development*, 1980 6:233-251
98. Fogelman K, Manor O. Smoking in pregnancy and development into early adulthood. *British Medical Journal*, 1988 297:1233-1236
99. Essen J, Fogelman K, Head J. Children's housing and their health and physical development. *Child: Care, Health & Development*, 1978 4:357-369
100. Tibbenham A, Gorbach P, Peckham C, et al. The influence of family size on height. In: "Growing up in Great Britain", Fogelman K, ed, Macmillan, 1983
101. Mascie-Taylor C, Boldsen J. Regional analysis of height variation in a contemporary British sample. *Annals of Human Biology*, 1985 12:315-324
102. Power C, Fogelman K, Fox AJ. Health and social mobility during the early years of life. *Journal of Social Affairs*, 1986 2:397-413
103. Fogelman K, Fox AJ, Power C. Class and tenure mobility, do they explain inequalities in health among young adults in Britain? In: "Health inequalities in European countries", Fox AJ, ed, Gower, 1989
104. Lasker G, Mascie-Taylor C. Effects of social class differences and social mobility on growth in height, weight and

- body mass index in a British cohort. *Annals of Human Biology*, 1989 16:1-8
105. Kuh D, Power C, Rodgers B. Secular trends in social class and sex differences in adult height. (forthcoming) 1991
106. Newens E, Goldstein H. Height, weight and the assessment of obesity in children. *British Journal of Preventive and Social Medicine*, 1972 26:33-39
107. Wedge P, Newens M, Goldstein H. Weighing children. *New Society*, 1972 vol. 20; 467-468
108. Peckham CS, Stark O, Simonite V, et al. The prevalence of obesity in British children born in 1946 and 1958. *British Medical Journal*, 1982 286:1237-1242
109. Peckham CS, Stark O, Moynihan C. Obesity in school children: is there a case for screening? *Public Health*, 1985 99:3-9
110. Power C, Moynihan C. Social class and changes in weight-for-height between childhood and early adulthood. *International Journal of Obesity*, 1988 12:445-453
111. Moynihan C, Stark O, Peckham CS. Obesity in 16 year olds assessed by weight and doctor's rating. *International Journal of Obesity*, 1986 10:27-34
112. Mascie-Taylor C, Boldsen J. Development indices of maturity in females. *Human Biology*, 1987 59:1-6
113. Mascie-Taylor C, Boldsen J. Recalled age of menarche in Britain. *Annals of Human Biology*, 1986 13:253-257
114. Stark O, Peckham CS, Moynihan C. Weight and age at menarche. *Archives of Disease in Childhood*, 1989 64:383-387
115. Power C, Peckham C. Childhood morbidity and adulthood ill-health. *Journal of Epidemiology and Community Health*, 1990 44:69-74

116. Pless IB, Power C, Peckham C. Long-term psychosocial sequelae of chronic physical illness in childhood. (forthcoming) 1991
117. Alberman E, Butler N, Sheridan M. Visual acuity of a national sample (1958 cohort) at seven years. *Developmental Medicine and Child Neurology*, 1971 13:9-14
118. Peckham C, Adams B. Vision screening in a national sample of 11 year old children. *Child: Care, Health & Development*, 1975 1:93-106
119. Peckham C, Gardiner P, Tibbenham A. Vision screening of adolescents and their use of glasses. *British Medical Journal*, 1979 i:1111-1113
120. Tibbenham A, Peckham C, Gardiner P. Vision screening in children tested at 7, 11 and 16 years. *British Medical Journal*, 1978 i:1312-1314
121. Gardiner PA, Peckham CS. Use of glasses by adolescents with good vision. *British Medical Journal*, 1980 281:780
122. Peckham C, Gardiner P, Goldstein H. Acquired myopia in 11-year-old children. *British Medical Journal*, 1977 i:542-545
123. McManus IC. What makes some children shortsighted? *Lancet*, 1987 ii:1267
124. Sheridan MD. Reported incidence of hearing loss in children of seven years. *Developmental Medicine and Child Neurology*, 1972 14:296-303
125. Peckham C, Sheridan M, Butler N. School attainment of seven-year-old children with hearing difficulties. *Developmental Medicine and Child Neurology*, 1972 14:592-602
126. Sheridan MD, Peckham C. Hearing and speech at seven. *Special Education*, 1973 62:16-30
127. Peckham CS, Sheridan M. Follow up at 11 years of 46

- children with severe unilateral hearing loss at 7 years. *Child: Care, Health & Development*, 1976 2:107-111
128. Richardson K, Peckham C, Goldstein H. Hearing levels of children tested at seven and eleven: a national study. *British Journal of Audiology*, 1976 10:117-123
129. Richardson K, Hutchison D, Peckham C, et al. Audiometric thresholds of a national sample of British sixteen year olds: a longitudinal study. *Developmental Medicine and Child Neurology*, 1977 19:797-802
130. Sheridan MD. Children of seven years with marked speech defects. *British Journal of Disorders of Communication*, 1973 8:9-16
131. Butler NR, Peckham C, Sheridan MD. Speech defects in children aged seven years: a national study. *British Medical Journal*, 1973 i:253-257
132. Sheridan M, Peckham C. Follow-up at 16 years of school children who had marked speech defects at 7 years. *Child: Care, Health & Development*, 1978 4:145-157
133. Calnan M, Richardson K. Speech problems in a national sample: associations with hearing, handedness and therapy. *Community Health*, 1976 8:101-105
134. Calnan M, Richardson K. Speech problems in a national survey: assessments and prevalences. *Child: Care, Health & Development*, 1976 2:191-202
135. Calnan M, Richardson K. Speech problems among children in a national survey - associations with reading, general ability, mathematics and syntactic maturity. *Educational Studies*, 1977 3:55-66
136. Calnan M, Peckham C. Incidence of insulin-dependent diabetes in the first sixteen years of life. *Lancet*, 1977 i:

137. Stewart-Brown S, Haslum M, Butler NR. Evidence for increasing prevalence of diabetes mellitus in childhood. *British Medical Journal*, 1983 286:1855-1857
138. Kurtz Z, Peckham C, Ades AE. The changing incidence of juvenile-onset diabetes mellitus. *Lancet*, 1988 ii:88-90
139. Anderson HR, Bland JM, Patel S, et al. The natural history of asthma in childhood. *Journal of Epidemiology and Community Health*, 1986 40:121-129
140. Anderson HR, Bland JM, Peckham CS. Risk factors for asthma up to 16 years of age: Evidence from a national cohort study. *Chest*, 1987 91S:127s-130s
141. Peckham C, Butler N. A national study of asthma in childhood. *Journal of Epidemiology and Community Health*, 1978 32:79-85
142. Kaplin B, Mascie-Taylor C. Biosocial factors in the epidemiology of childhood asthma in a British national sample. *Journal of Epidemiology and Community Health*, 1985 39:152-156
143. Kaplan BA, Brush G, Mascie-Taylor CGN. The relationship of childhood asthma and wheezy bronchitis with height, weight and body mass index. *Human Biology*, 1987 59:921-931
144. Strachan DP, Anderson HR, Bland JM, et al. Asthma as a link between chest illness in childhood and chronic cough and phlegm in young adults. *British Medical Journal*, 1988 296:890-893
145. Emond A, Golding J, Peckham CS. Cerebral palsy in two national cohort studies. *Archives of Disease in Childhood*, 1989 64:848-852
146. Ross EM. Convulsive disorders in British children. *Proceedings of Royal Society of Medicine*, 1973 66:703-704
147. Ross E, Peckham C, West P, et al. Epilepsy in childhood:

- findings from the National Child Development Study. British Medical Journal, 1980 280:207-210
148. Ross EM, Peckham CS. Seizure disorders in the National Child Development Study. In: "Advances in epilepsy", Rose FC, ed, Pitman Medical, 1983
149. Ross EM, Kurtz Z, Peckham C. Children with epilepsy: implications for the school health service. Public Health, London, 1983 97:75-81
150. Kurtz Z, Peckham C, Ross EM. Are all born equal? Incidence of febrile convulsions by season of birth. British Medical Journal, 1982 284:1404-1405
151. Kurtz Z, Tookey P, Ross EM. Epidemiology of epilepsy in childhood. In: "Epilepsy in young people", Ross EM, Chadwick D, Crawford R, eds, John Wiley & Sons, 1987
152. Frew R. The prevalence of mental retardation in children. Concern, 1972 10:27-31
153. Frew R, Peckham C. Mental retardation: a national study. British Hospital Journal and Social Services Review, 1972 Sept:2070-2072
154. Peckham C, Pearson R. Handicapped eleven-year-olds. Concern, 1976 19:27-29
155. Peckham C, Pearson R. The prevalence and nature of ascertained handicap in the National Child Development Study (1958 cohort). Public Health, 1976 90:111-121
156. Fogelman K. Progress and employment of handicapped children. In: "Stress and disability in childhood", Butler NR, Corner BD, eds, Wright; Bristol, 1984
157. Pearson R, Peckham C. Handicapped children in secondary schools from the National Child Development Study (1958 cohort). Public Health, 1977 91:296-304

158. Butler NR, Pringle MK. Prevention of handicaps in children. *Maternal and Child Care*, 1966 2:237-242
159. Butler NR. Children at risk. *Concern*, 1969 3:8-16
160. Alberman E, Goldstein H. The "at risk" register: a statistical evaluation. *British Journal of Preventive and Social Medicine*, 1970 24:129-135
161. Goldstein H. A mathematical model for population disease screening. *Bulletin of Institute of Mathematics and its Application*, 1975 11:64-66
162. Walker A. The handicapped school leaver and the transition to work. *British Journal of Guidance & Counselling*, 1980 8: 212-223
163. Walker A, Lewis P. Careers advice and employment experiences of a small group of handicapped school-leavers. *Careers Quarterly*, 1977 29:5-14
164. Walker A. Unqualified and underemployed: handicapped young people and the labour market. Macmillan, 1982
165. Walker A. The handicap stakes. *New Society*, 1982 60:383-384
166. Walker A. Unqualified and underemployed. *Concern*, 1982 43:4-9
167. Fogelman K, E. Britain's sixteen-year-olds. National Children's Bureau, 1976
168. Essen J, Peckham C. Nocturnal enuresis in childhood. *Developmental Medicine and Child Neurology*, 1976 18:577-589
169. Ghodsian M. Children's behaviour and the BSAG: some theoretical and statistical considerations. *British Journal of Social & Clinical Psychology*, 1977 16:23-28
170. Davie R. The problem child. *London Educational Review*, 1973 2:38-41
171. Pringle MK. Regional differences in child behaviour.

Eugenic Society Bulletin, 1969 1

172. Pringle MK. Scotland for good parents and happy children.

Times Educational Supplement, 1970 9 Jan:4

173. Pringle MK. The behaviour and adjustment of seven-year-olds in England, Scotland and Wales: some comparative results from the National Child Development Study. Scottish Educational Studies, 1970 2:3-10

174. Davie R. The behaviour and adjustment of seven-year-old children: some results from the National Child Development Study (1958 cohort). British Journal of Educational Psychology, 1968 38:1-2

175. Davie R. The behaviour and adjustment in school of seven year olds: sex and social class differences. Early Child Care and Development, 1973 2:39-47

176. Essen J, Ghodsian M. Sixteen year olds in households in receipt of supplementary benefits and family income supplement. In: "Supplementary Benefits Commission Annual Report 1976", HMSO, 1977

177. Ghodsian M, Fogelman K, Lambert L, et al. Changes in behaviour ratings of a national sample of children. British Journal of Social & Clinical Psychology, 1980 19:247-256

178. Fogelman K. School attendance, attainment and behaviour. British Journal of Educational Psychology, 1978 48:148-158

179. Power C, Manor O, Fox AJ, et al. Health in childhood and social inequalities in young adults. Journal of Royal Statistical Society, 1990 153:17-28

180. Power C. Social and economic background and class inequalities in health among young adults. Social Science and Medicine, 1991 32:411-418

181. Jones DR, Sedgwick P. Life events and accidents in the



- National Child Development Study. (forthcoming) 1991
182. Wedge P, Essen J. Children in adversity. Pan, 1982
183. Essen J, Wedge P. Continuities in childhood disadvantage. Heinemann Educational, 1982
184. Pless IB, Peckham CS, Power C. Predicting traffic injuries in childhood: a cohort analysis. *Journal of Pediatrics*, 1989 115:932-938
185. Jones DR, Sedgwick P. Accident liability in the National Child Development Study. (forthcoming) 1991
186. Bijur PE, Power C, Kurzon M, et al. Parent-adolescent conflict and adolescent injuries. *Journal of Developmental & Behavioural Pediatrics*, 1991 (in press)
187. Pearson R, Peckham C. Preliminary findings at the age of 11 years on children in the National Child Development Study (1958 cohort). *Netherlands Journal of Social Medicine*, 1972 50:937-41
188. Steedman J. Examination results in selective and non-selective schools. National Children's Bureau, 1983
189. Wedge P, Prosser H. Born to fail? Arrow/National Children's Bureau, 1973
190. Annett M. La lateralite manuelle des jumeaux: theorie du deplacement a droite. *Bulletin de Psychologie*, 1987 vol. XL(381)
191. McManus IC. Right- and left-hand skill: failure of the right shift model. *British Journal of Psychology*, 1985 76:1-16
192. Calnan M, Richardson K. Developmental correlates of handedness. *Annals of Human Biology*, 1976 3:329-342
193. Peckham C, Marshall W, Dudgeon D. Rubella vaccination of school-girls: factors affecting uptake. *British Medical Journal*, 1977 i:760-761
194. Peckham C. Speech defects in a national sample of children aged seven years. *British Journal of Disorders of Communication*,

1973 8:2-8

195. Sheridan MD, Peckham C. Follow-up at 11 years of children who had marked speech defects at 7 years. *Child: Care, Health & Development*, 1975 1:157-166

196. Barker DJP, Osmond C, Golding J, et al. Acute appendicitis and bathrooms in three samples of British children. *British Medical Journal*, 1988 296:956-958

197. Pearson R, Richardson K. Smoking habits of 16 year olds in the National Child Development Study. *Public Health*, 1978 92:136-144

198. Fogelman K. Smoking and health. *Concern*, 1980 37:25-29

199. Fogelman K. Drinking among sixteen year olds. In: "Growing up in Great Britain", Fogelman K, ed, Macmillan/National Children's Bureau, 1978

200. Ghodsian M, Power C. Alcohol consumption between the ages of 16 and 23 in Britain: a longitudinal study. *British Journal of Addiction*, 1987 82:193-198

201. Power C, Estaugh V. Employment and drinking in early adulthood: a longitudinal perspective. *British Journal of Addiction*, 1990 85:487-494

202. Power C, Estaugh V. The role of family formation and dissolution in shaping drinking behaviour in early adulthood. *British Journal of Addiction*, 1990 85:521-530

203. Estaugh V, Power C. Family disruption in early life and drinking in young adulthood. *Alcohol & Alcoholism*, 1991 (in press)

204. Pugh H, Power C, Goldblatt P, et al. Women's lung cancer mortality, socio-economic status and changing smoking patterns. *Social Science and Medicine*, 1991 (in press)

205. Ross EM, Tookey P. Educational needs and epilepsy in

- childhood. In: "Epilepsy, behaviour and cognitive function", Trimble MR, Reynolds EH, eds, Wiley, 1988 pp. 87-96
206. Butler N, Pringle MK. National Child Development Study (1958 cohort). In: "What is special education?", Association for Special Education, 1967
207. Davie R. National Child Development Study. In: "Research relevant to the education of children with learning handicaps", College of Special Education, 1968
208. Davie R. Local authority services for children. Concern, 1969 3:17-22
209. Ghodsian M, Calnan M. A comparative longitudinal analysis of special education groups. British Journal of Educational Psychology, 1977 47:162-174
210. Hart S. Learning the facts of life. Where, 1978 134:28-29
211. Lambert L. Measuring the gaps in teenagers' knowledge of sex and parenthood. Health and Social Services Journal, 1977 77:668-669
212. Lambert L, Pearson R. Sex education in schools. Journal of Institute of Health Education, 1977 15:4-11
213. Pearson R, Lambert L. Sex education, preparation for parenthood and the adolescent. Community Health, 1977 91:296-304
214. Adams B, Ghodsian M, Richardson K. Evidence for a low upper limit of heritability of mental test performance in a national sample of twins. Nature, 1976 263:314-316
215. Adult Literacy and Basic Skills Unit. Literacy, numeracy and adults, evidence from the National Child Development Study: findings from the ALBSU/MSC research project undertaken by the University of Lancaster. 1987
216. Bagley C. Achievement, behaviour disorder and social circumstances in West Indian children and other ethnic groups.

- In: "Self-concept achievement and multicultural education",  
Verma GK, Bagley C, eds, Macmillan, 1982
217. Blane DC, Pilling D, Fogelman K. The use of longitudinal data in a study of children's school mobility and attainment. *British Journal of Educational Psychology*, 1985 55:310-313
218. Essen J, Ghodsian M. Children of immigrants: school performance. *New Community*, 1980 7:1-8
219. Essen J, Fogelman K, Tibbenham A. Some non-academic correlates of ability grouping in secondary schools. *Educational Studies*, 1979 5:83-93
220. Kerckhoff A. Effects of ability grouping in British secondary schools. *American Sociological Review*, 1986 51:842-858
221. Essen J, Fogelman K, Head J. Childhood housing experiences and school attainment. *Child: Care, Health & Development*, 1978 4:41-58
222. Essen J, Fogelman K, Ghodsian M. Long term changes in the school attainment of a national sample of children. *Educational Research*, 1978 20:143-151
223. Essen J. Living in one-parent families: attainment at school. *Child: Care, Health & Development*, 1979 5:83-93
224. Davie R. Where is the evidence that children suffer from being in large classes? *Where*, 1972 67:69-73
225. Davie R. The missing year. *Guardian*, 1972 12 Sept:16
226. Davie R. Houses before school. *Times Education Supplement*, 1972 9 June:4
227. Tibbenham A, Essen J, Fogelman K. Ability grouping and school characteristics. *British Journal of Educational Studies*, 1978 26:8-23
228. Lacey C, Blane D. Geographical mobility and school attainment - the confounding variables. *Educational Research*,

1979 21:200-206

229. Davie R. Size of class, educational attainment and adjustment. *Concern*, 1971 7:6-14
230. Davie R. Reading at the infant stage: some results from the National Child Development Study (1958 cohort). In: "Reading: problems and perspectives: a report of the Nottingham Reading Study Conference, 1967", Daniels JC, ed, United Kingdom Reading Association; Stockport, 1970
231. Davie R. Children at risk. *Froebel Journal*, 1970 no. 16
232. Essen J, Lambert L, Head J. School attainment of children who have been in care. *Child: Care, Health & Development*, 1976 2:339-351
233. Evans R, Sparrow M. Trends in the assessment of early childhood development. *Child: Care, Health & Development*, 1975 1:127-141
234. Fogelman K. The effectiveness of schooling: some recent findings from the National Child Development Study. In: "Perimeters of social repair", Armytage WHG, Peel J, eds, Academic Press, 1978
235. Fogelman K. The research evidence on secondary school size. In: "Big and beautiful: views of the size of schools", Secondary Heads Association, 1979
236. Fogelman K. Educational and career aspirations of sixteen-year-olds. *British Journal of Guidance & Counselling*, 1979 7: 42-56
237. Fogelman K. Assessing examination attainment in selective and non-selective secondary schools. In: "Publishing school examination results: a discussion", Plewis I, et al, eds, Institute of Education, 1981
238. Fogelman K. Assessment of examination performance in

- different types of schools. Journal of Royal Statistical Society series A, 1984 147:569-581
239. Fogelman K. Problems in comparing examination attainment in selective and comprehensive schools. Oxford Review of Education, 1984 vol. 10
240. Fogelman K. After school: the education and training experiences of the 1958 cohort. Further Education Unit, 1986
241. Fogelman K, Essen J, Tibbenham A. Ability grouping in secondary schools and attainment. Educational Studies, 1978 4:201-212
242. Fogelman K, Goldstein H. Social factors associated with changes in educational attainment between 7 and 11 years of age. Educational Studies, 1976 2:95-109
243. Fogelman K, Goldstein H, Essen J, Ghodsian M. Patterns of attainment. Educational Studies, 1978 4:121-130
244. Fogelman K, Gorbach P. Age of starting school and attainment at 11. Educational Research, 1978 21:65-66
245. Fogelman K, Holden H. Examination results in selective and non-selective schools. Concern, 1983 48:6-9
246. Fogelman K, Richardson K. School attendance: some results from the National Child Development Study. In: "Truancy", Turner B, ed, Ward Lock Education, 1974
247. Fogelman K, et al. Progress in secondary schools: reflections in reply. In: "Children's progress in secondary schools", Dancy J, ed, University of Exeter School of Education, 1981
248. Fogelman K, Richardson K. An anatomy of truancy. Teacher, 1974 vol. 25
249. Fogelman K, Tibbenham A, Lambert L. Absence from school: findings from the National Child Development Study. In: "Out of

- school: perspectives in truancy and school refusal", Berg I, Hersov L, eds, 1980
250. Goldstein H, Fogelman K. Age standardisation and seasonal effects in mental testing. *British Journal of Educational Psychology*, 1974 44:109-115
251. Hamilton M, Stasinopoulos M. Literacy, numeracy and adults: evidence from the National Child Development Study. Adult Literacy & Basic Skills Unit, 1987
252. Hart S. Does the size of a family affect a child's education? *Where*, 1976 113:48-50
253. Hart S. If you're a poor reader you can still write a good essay. *Where*, 1977 125:42-43
254. Hitchfield E. Gifted children and their problems. *Education* 3-13, 1976 4:10-13
255. Hutchison D, Holden H. What standards? What fall? *Report Journal of Assistant Masters & Mistresses Association*, 1984 March/April:4-5
256. Hutchison D, Prosser H, Wedge P. The prediction of educational failure. *Educational Studies*, 1979 5:73-82
257. Ives R. School reports and self reports of examination results. *Social & Community Planning Research Survey Methods Newsletter*, 1985 Winter:5-6
258. Steedman J. Progress in secondary schools. National Children's Bureau, 1980
259. Steedman J. Examination results in mixed and single sex schools: findings from the National Child Development Study. Equal Opportunities Commission; Manchester, 1983
260. Steedman J, Fogelman K. Secondary schooling: findings from the National Child Development Study. *Concern*, 1980 36:5-34
261. Steedman J, Fogelman K, Hutchison D. Real research.

National Children's Bureau, 1980

262. Pringle MK. Why are the most stable pupils found in Scotland? *Education*, 1970 136:318-328

263. Richardson K. Reading attainment and family size: an anomaly. *British Journal of Educational Psychology*, 1977 47: 71-75

264. Richardson K. The writing productivity and syntactic maturity of 11 year olds in relation to their reading habits. *Reading*, 1977 11:46-53

265. Richardson K, Calnan M, Essen J, et al. The linguistic maturity of 11 year olds. *Journal of Child Language*, 1976 3: 95-115

266. Simonite V. Literacy and numeracy: evidence from the National Child Development Study. *Adult Literacy and Basic Skills Unit*, 1984

267. Lambert L. Careers guidance and choosing a job. *British Journal of Guidance & Counselling*, 1978 6:147-160

268. Essen J, Fogelman K. Childhood housing experiences. In: "Growing up in Great Britain", Fogelman K, ed, Macmillan/National Children's Bureau, 1983

269. Donnison D, ed. A pattern of disadvantage. NFER Publishing; Windsor, 1972

270. Donnison D, Soto P. The good city: a study of urban development and policy in Britain. Heinemann, 1980

271. Essen J, Parrinder D. Housing for children: further findings from the National Child Development Study. *Housing Review*, 1974 24:112-114

272. Fogelman K. Developmental correlates of family size. *British Journal of Social Work*, 1975 5:45-57

273. Fogelman K. Bored children. *New Society*, 1976 37:80



274. Fogelman K. Bored eleven year olds. British Journal of Social Work, 1976 6:201-211
275. Tibbenham A. Housing and truancy. New Society, 1977 39: 501-502
276. Ghodsian M, Essen J. Children of immigrants: social and home circumstances. New Community, 1980 8:195-205
277. Goldstein H, Wedge P. Children in statistics. New Society, 1980 54:17-18
278. Parrinder D. Housing for children: a second look. Housing Review, 1972 21:85-86
279. Petzing J, Wedge P. Homes fit for children? New Society, 1970 16:448-450
280. Prosser H. Family size and children's development. Health and Social Services Journal, 1973 432:11-12
281. Sparrow M, Utting J. Children living off the ground. Concern, 1981 41:21-26
282. Wedge P. The right to a full life. In: "The 'poor' of the 1970s: the report of an interprofessional conference", Shotton Hall, 1971
283. Wedge P. Children and the cycle of deprivation. FSU quarterly, 1973 4:8
284. Wedge P. Social disadvantage - the facts and the practitioner. Concern, 1974 13:6-7
285. Wedge P. Children at risk - a pattern of disadvantage. In: "Planning for our children: report of a Care conference", CARE; Dublin, 1977
286. Wedge P. Reducing children's adversities. Concern, 1982 45:7-14
287. Wedge P, Petzing J. Housing for children. Housing Review, 1970 19:165-166

288. Pilling D. Escape from disadvantage. Falmer Press/National Children's Bureau; London, 1990
289. Pringle MK. Born illegitimate (research feedback). Concern, 1972 7-13
290. Crellin E, Pringle MK, West P. Born illegitimate. NFER Publishing; Windsor, 1971
291. Mapstone E. Children in care. Concern, 1969 3:40-48
292. Lambert L, Essen J, Head J. Variations in behaviour ratings of children who have been in care. Journal of Child Psychology & Psychiatry, 1977 18:335-346
293. Essen J. Living in one-parent families: income and expenditure. Poverty, 1978 40:23-28
294. Essen J, Lambert L. Living in one-parent families: relationships and attitudes of sixteen-year-olds. Child: Care, Health & Development, 1977 3:301-318
295. Ferri E. Growing up in a one-parent family. NFER publishing; Windsor, 1976
296. Ferri E. Children in one parent families. Ginger, 1979 Feb:4-6
297. Ferri E. Children in one-parent families. In: "The parental role", National Children's Bureau, 1972
298. Ferri E. Characteristics of motherless families. British Journal of Social Work, 1973 3:91-100
299. Ferri E. Children in motherless families. Concern, 1973 12:24-25
300. Ferri E. Growing up in a one parent family. Concern, 1976 20:7-10
301. Ferri E, Robinson H. Coping alone. NFER Publishing; Windsor, 1976
302. Lambert L. Living in one-parent families: school leavers

- and their future. Concern, 1978 29:26-30
303. Lambert L. Children in changing families. Concern, 1980  
37:12-15
304. Lambert L, Hart S. Who needs a father? New Society, 1976  
37:80
305. Lambert L, Streater J. Children in changing families.  
Macmillan, 1980
306. Robinson H. Lone parenthood. Concern, 1975 18:26-31
307. Ferri E. One parent, single or unmarried? Concern, 1974  
14:5-6
308. Ferri E. Background and behaviour of children in one-parent  
families. Therapeutic Education, 1975 3:6-10
309. Ferri E. The single parent family: aspects of children's  
welfare. Papers of Royal Society of Health Annual Congress, 1975  
pp. 168-170
310. Ferri E. One parent families. Journal of Association of  
Workers for Maladjusted Children, 1976 vol. 4
311. Ferri E. Stepchildren: a national study. NFER/Nelson;  
Windsor, 1984
312. Ferri E. Growing up in a step family. Concern, 1984 50:4-6
313. Pringle MK. Follow-up of adopted children. Journal of  
Medical Women's Federation, 1967 43:146-148
314. Adams B. Adoption and after. New Society, 1972 19:590-592
315. Seglow J, Pringle MK, Wedge P. Growing up adopted. NFER  
Publishing; Windsor, 1972
316. Lambert L. Adopted from care by the age of seven. Adoption  
and Fostering, 1981 105:28-36
317. Whitehead L. Research feedback - early parenthood. Concern,  
1977 24:28-30
318. Ghodsian M, Lambert L. Mum and dad are not so bad. Sixteen

year olds' views of how they get on with their parents. AEP Journal, 1978 4:27-33

319. Whitehead L. Sex differences in children's responses to family stress: a re-evaluation. Journal of Child Psychology & Psychiatry, 1979 20:247-254

320. Fogelman K. The contribution of longitudinal studies to family research. In: "Proceedings of Australian Family Research Conference 1983, vol VI", Institute of Family Studies; Melbourne, 1984

321. Elias P, Blanchflower D. Local labour market influences on early occupational attainment. In: "Unemployment, the regions and labour markets: reactions to recession", Gordon I, ed, Pion Press, 1987

322. Jones G. Young workers in the class structure. Work, Employment & Society, 1987 1:487-508

323. Elias P, Blanchflower D. The occupations, earning and work histories of young adults: who gets the good jobs. Department of Employment research paper no. 68. HMSO; London, 1989

324. Payne J. Young self-employed workers. Employment Gazette, 1984 92:497-503

325. Payne J. Unemployment, apprenticeships and training - does it pay to stay on at school? British Journal of Sociology of Education, 1988 8:425-445

326. Jones G. Leaving the parental home: an analysis of early housing careers. Journal of Social Policy, 1987 16:49-74

327. Hibbert A, Fogelman K, Manor O. Occupational outcomes of truancy. British Journal of Educational Psychology, 1990 60: 23-36

328. Hibbert A, Fogelman K. Future lives of truants: family formation and health-related behaviour. British Journal of

- Educational Psychology, 1990 60:171-179
329. Goldstein H. Longitudinal studies and the measurement of change. *Statistician*, 1968 18:93-117
330. Healy M, Goldstein H. An approach to the scaling of categorical attributes. *Biometrika*, 1976 63:201-211
331. Shepherd P. Literacy and numeracy and the implications for survey research: evidence from the National Child Development Study. *Journal of Market Research Society*, 1984 26:147-158
332. Plewis I. Analysing change: measurement and explanation using longitudinal data. Wiley, 1985
333. Hutchison D. Event history and survival analysis in the social sciences. Part I, Background and introduction. *Quality & Quantity*, 1988 22:203-219
334. Hutchison D. Event history and survival analysis in the social sciences. Part2, Advanced applications and recent developments. *Quality & Quantity*, 1988 22:255-278
335. Boldsen J, Mascie-Taylor CGN, Madsen B. Analysis of repeated reported adult statures. *American Journal of Physical Anthropology*, 1986 69:537-540
336. Hutchison D. Drop-out from apprenticeship in the National Child Development Study. In: "Statistical methods of analysis for longitudinal studies and event history data", Crouchley R, ed, Gower, 1987
337. Shepherd P. The National Child Development Study: an introduction to the background to the study and the methods of data collection. NCDS working paper no. 1. Social Statistics Research Unit, City University, London; 1985
338. National Child Development Study. NCDS News, National Child Development Study Newsletter no. 3. Social Statistics Research Unit, City University, London; 1988

National Child Development Study User Support Group Working Paper Series

No.	Title	Author(s)	Date
8.	Health and social mobility during the early years of life Now published in <u>Quarterly Journal of Social Affairs</u> , 1986, 2 (4) 397-413	Chris Power Ken Fogelman & John Fox (SSRU)	May 1986
9.	Effects of ability grouping in secondary schools in Great Britain	Alan Kerckhoff (Duke University, N. Carolina)	June 1986
10.	Leaving the parental home: an analysis of early housing careers	Gill Jones (Thomas Coram Research Unit)	July 1986
11.	Stratification in youth	Gill Jones (Thomas Coram Research Unit)	July 1986
12.	Social class changes in weight-for-height between childhood and early adulthood	Chris Power (SSRU) & Clare Moynihan (Royal Marsden Hospital)	July 1986
13.	Response to a national longitudinal study: policy and academic implications for the study of change	Dougal Hutchison (NFER)	August 1986
14.	Drop out from apprenticeship: an application of survival methods to grouped data	Dougal Hutchison (NFER)	August 1986
15.	Event history and survival analysis in the social sciences: review paper and introduction	Dougal Hutchison (NFER)	August 1986
16.	Transitions in young adulthood	Kath Kiernan (SSRU)	October 1986
17.	The NCDS5 Development Programme	Peter Shepherd (SSRU)	October 1986
18.	A note on household income data in NCDS3	John Micklewright (Inst of Economics and Statistics, Univ of Oxford)	December 1986

National Child Development Study User Support Group Working Paper Series

---

No.	Title	Author(s)	Date
19.	Unemployment, apprenticeships and training - does it pay to stay on at school?	Joan Payne (Dept of Social & Admin Studies, Univ of Oxford)	December 1986
20.	The Fourth Follow-up of the National Child Development Study: an account of the methodology and summary of the early findings	NCDS4 Research Team (National Children's Bureau)	March 1987
21.	Class and tenure mobility, do they explain social inequalities in health among young adults in Great Britain	Ken Fogelman, Chris Power & John Fox (SSRU)	April 1987
22.	Handedness in Twins: the right shift theory	Marian Annett (Dept of Applied Social Studies, Coventry Poly)	March 1987
23	Trade union membership and activism among young people in Great Britain	Joan Payne (Dept of Social & Admin Studies, Univ of Oxford)	December 1987
24.	Early adult outcomes of truancy	Angelika Hibbett (SSRU)	July 1987
25.	Family breakdown, social mobility and health inequalities	Ken Fogelman Chris Power & John Fox (SSRU)	July 1987
26.	New possibilities for longitudinal studies of intergenerational factors in child health and development	John Fox & Ken Fogelman (SSRU)	December 1987
27.	Smoking in pregnancy and development into early adulthood	Ken Fogelman (SSRU)	February 1988
28.	Health selection: an explanation of social inequalities in young adults?	Chris Power Orly Manor John Fox & Ken Fogelman (SSRU)	February 1988
29.	A longitudinal study of housing and social circumstances in childhood and early adulthood	Mayer Ghodsian & Ken Fogelman (SSRU)	March 1988

---

National Child Development Study User Support Group Working Paper Series

---

No.	Title	Author(s)	Date
30.	Early adult outcomes of truancy, II: The effects of truancy after allowing for other factors	Angelika Hibbett & Ken Fogelman (SSRU)	March 1988
31.	Occupational expectations and outcomes: Some implications for vocational guidance & manpower planning	Judith Glover (Dept of Sociology Univ of Surrey)	April 1988
32.	Childhood morbidity and adult ill-health	Chris Power (SSRU) & Catherine Peckham (Institute of Child Health, London)	August 1988
33.	Family disruption in early life and drinking in young adulthood	Valerie Estaugh (Family Policy Studies Centre) & Chris Power (SSRU)	December 1989
34.	A review of child health in the 1958 birth cohort: National Child Development Study To be published October 1991 in <u>Paediatric &amp; Perinatal Epidemiology</u>	Chris Power (Institute of Child Health, London)	March 1991

---

National Child Development Study User Support Group, Working Paper No 34, March 1991. Social Statistics Research Unit, City University, Gloucester Building, Gloucester Way, London, EC1R 0BN. Telephone 071 253 4399.



## NATIONAL CHILD DEVELOPMENT STUDY

The National Child Development Study (NCDS) is a continuing longitudinal study which is seeking to follow the lives of all those living in Great Britain who were born between 3 and 9 March, 1958.

It has its origins in the Perinatal Mortality Survey (PMS). This was sponsored by the National Birthday Trust Fund and designed to examine the social and obstetric factors associated with the early death or abnormality among the 17,000 children born in England, Scotland and Wales in that one week.

To date there have been four attempts to trace all members of the birth cohort in order to monitor their physical, educational and social development. These were carried out by the National Children's Bureau in 1965 (when they were aged 7), in 1969 (when they were aged 11), in 1974 (when they were aged 16) and in 1981 (when they were aged 23). In addition, in 1978, details of public examination entry and performance were obtained from the schools, sixth-form colleges and FE colleges.

For the birth survey information was obtained from the mother and from medical records by the midwife. For the purposes of the first three NCDS surveys, information was obtained from parents (who were interviewed by health visitors), head teachers and class teachers (who completed questionnaires), the schools health service (who carried out medical examinations) and the subjects themselves (who completed tests of ability and, latterly, questionnaires). In addition the birth cohort was augmented by including immigrants born in the relevant week in the target sample for NCDS1-3.

The 1981 survey differs in that information was obtained from the subject (who was interviewed by a professional survey research interviewer) and from the 1971 and 1981 Censuses (from which variables describing area of residence were taken). Similarly, during the collection of exam data in 1978 information was obtained (by post) only from the schools attended at the time of the third follow-up in 1974 (and from sixth-form and FE colleges, when these were identified by schools). On these last two occasions case no attempt was made to include new immigrants in the survey.

All NCDS data from the surveys identified above are held by the ESRC Data Archive at the University of Essex and are available for secondary analysis by researchers in universities and elsewhere. The Archive also holds a number of NCDS-related files (for example, of data collected in the course of a special study of handicapped school-leavers, at age 18; and the data from the 5% feasibility study, conducted at age 20, which preceded the 1981 follow-up), which are similarly available for secondary analysis.

Further details about the National Child Development Study can be obtained from the NCDS User Support Group.