

BCS70 data note

Research on health and health behaviours based on the 1970 British Cohort Study

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health behaviours based on the
1970 British Cohort Study (BCS70)**

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Introduction

This review covers research using information from the childhood waves of BCS70 (birth to 16 years) as either health outcomes or as predictors of later health outcomes. We limit the review largely to papers published in peer-reviewed journals. We build on previous work by Dodgeon (2012). The review is based primarily on keyword searches of the Centre for Longitudinal Studies (CLS) [online bibliography](#), and does not claim to be exhaustive, as any papers not in the CLS bibliography are likely to have been missed by this review. Nevertheless, we hope that this paper will serve as a useful entry point for researchers investigating the extant literature on health using BCS70 data.

Table 1 shows the number of outputs found by the review on each topic.

Table 1: Outputs by topic

| Topic | Number of outputs* |
|------------------------------------|--------------------|
| Overweight and obesity | 15 |
| Exercise and nutrition | 14 |
| Alcohol | 10 |
| Smoking | 22 |
| Immunisation | 6 |
| Sight | 6 |
| Hearing | 3 |
| Cancer | 2 |
| Accidents | 12 |
| Cognition | 12** |
| Asthma | 10 |
| Eczema | 9 |
| Epilepsy, convulsions, seizures | 8 |
| Depression and emotional wellbeing | 28 |
| Mortality | 5 |
| General and other | 22 |

*Note that some papers feature in more than one section.

**We have included only those papers on cognition with a distinct focus on health.

We begin with a description of the data available for health research. We then present an overview of key papers on selected topics. This is followed by a complete list of the papers reviewed by topic including abstracts.

BCS70 health data

BCS70 began as the British Births Survey, when information was collected about the births and social circumstances of over 17 000 babies born in England, Scotland, Wales, and Northern Ireland (Elliott and Shepherd 2006). A questionnaire was completed by the midwife who had been present at the birth and, in addition, information was extracted from clinical records. The study aimed to examine the social and biological characteristics of the mother in relation to neonatal morbidity.

Sub-studies were carried out at 22 months and 42 months as part of a project known as the British Births Child Study, 1972-73. This was designed to explore the effects of foetal malnutrition on the development of the child. These sub-studies involved a 10% random sample alongside all twins, post-mature and growth retarded births to married mothers. A number of publications reported specifically on the sub-studies (Chamberlain & Davey 1975, 1976; Chamberlain & Simpson 1977, 1979).

In 1975 and 1980 parents of the children in the study were interviewed by health visitors, and information was gathered from the child's class teacher and head teacher, from the school health service, and from the children themselves.

The 1986 follow-up was known as 'Youthscan' and comprised 16 separate survey instruments, including parental questionnaires, class teacher and head teacher questionnaires, and medical examinations. In addition to completing educational assessments, the cohort members themselves answered questionnaires on a wide range of different topics and were asked to keep two four-day diaries, one on nutrition and one on general activity. It was originally planned to trace cohort members in time to interview them at 15.5 years old, well before the minimum school leaving age. Unfortunately, industrial action by the teachers, who were responsible for the educational tests, meant that the survey had to be delayed, and also resulted in incomplete data collection from schools.

A postal follow-up of cohort members was conducted in 1996 when study members were aged 26.

In 1999-2000, BCS70 combined with NCDS to undertake, for the first time, a joint survey. In 2000 a simultaneous survey of the BCS70 and NCDS cohorts was undertaken to facilitate comparisons between these two groups born 12 years apart. This study restored the BCS70 sample to over 11 000 and established a baseline for the scientific content of the adult surveys, ensuring that all major life domains were covered. The age 34 sweep followed in 2004-05 which also, for half the sample, involved data being collected from study members' children via self-completion questionnaires and assessments. The age 38 follow-up took the form of a 30-minute telephone survey. The age 42 survey consisted of a one hour face-to-face interview and a self-completion questionnaire.

The main health and medical data collected from birth to age 42 is listed in Table 1. Several topics have repeated measures, while others are only appropriate for a specific life stage. During childhood most health measures were obtained via medical examination or by parental reports. During adulthood information has mostly been obtained from self-reports by the cohort member.

Table 2: Summary of health and medical information

| Follow-Up | Sample size | Data collected |
|------------------------------------|---------------|--|
| British Birth Survey (1970) | 16,135 | Questionnaire completed by midwives from records and by asking the mother Mother's smoking during pregnancy Contraception Antenatal care Abnormalities during pregnancy Length and abnormalities of labour Analgesia and anaesthesia Sex, weight, progress, management, and outcome of infant Obstetric history |
| 5 yr follow-up (1975) | 13,135 | Parental questionnaire (Mother) Pregnancy history Breastfeeding Immunisation Hospital admissions Use of health services Specific health conditions Accidents Family health Smoking (Parents) Maternal self completion (n=13,135) Child's health, development and behavioural difficulties Maternal mental health (Malaise scale) Medical examination (n=12,829) Height and head circumference Details of use of health services extracted from medical records |

| Follow-Up | Sample size | Data collected |
|------------------------|-------------|---|
| 10 yr follow-up (1980) | 14,875 | <p>Parental interview (n=14,875)</p> <p>Specific health conditions</p> <p>Immunisation</p> <p>Accidents</p> <p>Use of health services</p> <p>Hospital admissions</p> <p>Medication</p> <p>Clinic attendance</p> <p>Disability</p> <p>Height (Parents)</p> <p>Weight (Parents)</p> <p>Family health</p> <p>Maternal drinking during pregnancy</p> <p>Smoking (Parents)</p> <p>Maternal self-completion(n=13,869)</p> <p>Bed wetting</p> <p>Speech difficulties</p> <p>Eating problems</p> <p>Sleeping difficulties</p> <p>Maudsley behaviour inventory</p> <p>Mother's health: Cornell Health Inventory</p> <p>School (n=12,755)</p> <p>Maudsley behaviour inventory</p> <p>Conners hyperactivity scale</p> <p>Medical examination (n=13,869)</p> <p>Disability and chronic illness</p> <p>Height and weight</p> <p>Head circumference</p> <p>Blood pressure</p> <p>Pulse</p> <p>Near and distant vision</p> <p>Audiometry</p> <p>Laterality</p> <p>Speech assessment</p> <p>Co-ordination</p> |

| Follow-Up | Sample size | Data collected |
|--|---------------|---|
| | | Child self-completion (n=12,699) Smoking Diet Caraloc scale (ability to control destiny) Lawseq self-esteem scale |
| 16 yr follow-up (Youthscan, 1986) | 11,628 | Parental questionnaire (n=9,584) Health status Specific health conditions Chronic illness and disability Medication Accidents and injuries Use of health services Hospital admissions Alcohol consumption Smoking Special health requirements Chronic illness and disability Psychological/psychiatric problems Family health Maternal self-completion(n=8, 993) Maternal mental health (Malaise scale) Maternal self-esteem Family diet Alcohol (parents and teenager) Daughter's menstruation Exercise (parents and teenager) General health of teenager Specific health problems of teenager, including sleeping, eating and psychological/behavioural. Medical examination (n=6,143) Disability Specific health conditions Blood pressure Distant and near vision tests |

| Follow-Up | Sample size | Data collected |
|-------------------------------|--------------|--|
| | | <p>Motor co-ordination tests</p> <p>Audiometry</p> <p>Height and weight</p> <p>Head circumference</p> <p>Self-completion (n=5,265 to 6,898)*</p> <p>Health status</p> <p>Medical history</p> <p>Exercise and sporting activities</p> <p>Hygiene</p> <p>Use of medication</p> <p>Vaccinations</p> <p>Use of health services</p> <p>Diet (<i>including a 4 day diary – n = 4,693</i>)</p> <p>Sleep</p> <p>Smoking</p> <p>Alcohol</p> <p>Drug use</p> <p>Laterality</p> <p>Age at first menstruation</p> <p>Menstrual symptoms</p> <p>Contraceptive pill</p> <p>Sexual behaviour</p> <p>Self-esteem</p> <p>Attitudes to health and emotions</p> <p>*Cohort members completed a number of questionnaires – achieved sample sizes varied somewhat</p> |
| 26 yr follow-up (1996) | 8,798 | <p>General health</p> <p>Specific health conditions</p> <p>Mental health (Malaise Scale)</p> <p>Accidents / injuries / assaults</p> <p>Smoking</p> <p>Drinking</p> <p>Height and weight (self-reported)</p> |

| Follow-Up | Sample size | Data collected |
|-------------------------------|---------------|---|
| 30 yr follow-up (2000) | 11,261 | <p>General health Long-term health conditions Mental health (Malaise Scale / GHQ12) Disability / limitations Hospital admissions Accidents Smoking Drinking Problematic alcohol consumption (CAGE scale) Drug use Diet Exercise Height and weight (self-reported) Pregnancy history Infertility</p> |
| 34 yr follow-up (2004) | 9,665 | <p>General health Long-term health conditions Mental health (Malaise scale) Disability / limitations Hospital admissions Accidents Smoking Drinking Problematic alcohol consumption (CAGE scale) Exercise Height and weight (self-reported) Pregnancy history Numeracy and literacy assessments, including dyslexia</p> <p>Cohort members in a one in two sample with resident natural/ adopted child aged 17: Age-specific to parent questions on: child's physical and mental health; mother's health-related behaviour during pregnancy;</p> |

| Follow-Up | Sample size | Data collected |
|-------------------------------|--------------|---|
| | | <p>physical and cognitive development of child(ren)</p> <p>Child aged 10–16 (one in two sample): Age-specific questions on smoking, drinking, and drug use</p> |
| 38 yr follow-up (2008) | 8,874 | <p>General health</p> <p>Current health conditions</p> <p>Disability /limitations</p> <p>Smoking</p> <p>Pregnancy history</p> |
| 42 yr follow-up (2012) | 9,842 | <p>General health</p> <p>Longstanding illnesses</p> <p>Current health conditions (including mental health problems)</p> <p>Mental health (Malaise scale)</p> <p>Mental well-being (Warwick Edinburgh Mental Well Being Scale)</p> <p>Smoking</p> <p>Drinking</p> <p>Problematic alcohol consumption (AUDIT scale)</p> <p>Exercise</p> <p>Diet</p> <p>Sleep</p> <p>Height and weight (self-reported)</p> <p>Pregnancy history</p> <p>Gynaecological problems</p> <p>Hysterectomies / Oophorectomies</p> <p>Menopause</p> <p>Use of HRT</p> <p>Fertility intentions / Childlessness</p> <p>Infertility treatments</p> |

Literature review

There are a number of books that provide a useful general introduction to health data in the early waves of the study. The birth sweep provided a valuable insight into patterns of obstetric and neonatal care in the United Kingdom (Chamberlain, et al 1978; Chamberlain, et al. 1975). The birth and five-year findings relating to health were discussed in Butler et al (1986), and general findings from the first two sweeps were also outlined in Osborn et al (1994).

More recently, Ferri et al (2003) have provided an overview of intergenerational changes between the 1946, 1958 and 1970 cohorts, including changing health and lifestyles.

Overweight and obesity

The birth study included birth weight, and height and weight measurements were taken at ages 10 and 16, but subsequent waves to date have included only self-report height and weight data.

Several papers look at childhood risk factors for overweight in adulthood. A number focus on cognitive, psychological and emotional factors. Gale, Batty & Deary (2008) find that the link between childhood IQ and overweight risk at age 30 is partially mediated by childhood locus of control. Ternouth et al (2009) find that childhood emotional problems and external locus of control predict weight gain between the ages of 10 and 30. White et al (2012) find that general behavioural problems at age five predict an increased risk of overweight at age 30.

Lifestyle and health predictors of overweight are also examined in the literature. Viner & Cole (2006) find that an increase in zBMI between 16 and 30 years was predicted by sedentary activities, eating take-away meals, consuming fizzy drinks, and a history of dieting to lose weight during the teenage years. Viner & Cole (2005a) also find that TV viewing in childhood (at age five) continues to influence the risk of overweight into adulthood (age 30). Montgomery et al (2010) find that hearing impairment at age 10 is linked to substantially increased odds of overweight at age 34.

Research limited to the childhood measures includes Thomas et al.'s (1989) investigation of the link between BMI and blood pressure at age 10 and Crawley & Portides' (1995) comparison of measured to self-reported height and weight at age 16, which finds that body mass index (BMI) is underestimated by the self-reported data, but finds no systematic bias according to demographic factors.

Viner & Cole (2005b) look at the consequences of childhood obesity for adult socioeconomic, educational, social, and psychological outcomes, and find that obesity limited to childhood has little impact on adult outcomes.

Exercise and nutrition

The 1986 wave of BCS70 included four-day dietary diaries collected from 4,760 teenagers. The 1986 survey was ambitious, comprising 16 separate survey instruments, and there were problems with data collection, including a teachers' strike, which contributed to small sample sizes for each of the instruments (Goodman & Butler 1987). Dietary intake data were quantitatively coded by Helen Crawley (then based at the University of North London), who was provided the data by Neville Butler (then Principal Investigator of BCS70). Crawley published nine journal articles using the 1986 dietary diaries (Crawley & Portides 1995; Crawley & Summerbell 1997, 1998; Crawley 1993 a and b; Crawley & Shergill-Bonner 1995; Crawley & While 1995, 1996). However, this dataset was never deposited with the data archive. Crawley's work was exclusively cross-sectional and largely descriptive. The detailed information gathered on diet in 1986 has never been exploited longitudinally to examine dietary change or the consequences of earlier diet for later health. There is certainly scope for further work here if the dietary data can be documented and deposited.

The age 16 survey included very detailed information on the young person's participation in different kinds of exercise and physical activity. Vigorous exercise at age 16 is linked to emotional wellbeing at the same age by Steptoe & Butler (1996). Controlling for social class and physical health status, adolescents with higher scores on a scale of sports and exercise (based on the frequency of reported participation in a range of different sports and activities) had lower scores on the malaise scale, while those who engaged in non-vigorous activities such as darts and snooker had higher malaise scores. The authors acknowledge that this cross-sectional analysis cannot be used to make causal inferences, and suggest that further investigation of the effect of exercise on mental health is needed.

Apart from studies already mentioned in the previous section, work linking childhood diet to later outcomes includes Moore & Van Goozen's (2009) study linking high childhood confectionary consumption (at age 10) to adult convictions for violence (at age 34). This analysis is problematic in that the outcome variable (self-reported convictions for violence by age 34) is reported by only 0.5% of the sample, the likely causal mechanism is unclear, and no controls for socio-economic background in childhood are included in the models.

Fairly extensive questions on diet were asked in 2000 (age 30). Batty et al (2007) show a link between childhood IQ and healthy diet and exercise behaviours at 30, while Gale et al's (2007) study links high childhood IQ to a greater likelihood of vegetarianism at age 30.

Alcohol

The cohort members have been asked about their alcohol consumption from the age of 16 onwards, and mother's alcohol consumption was reported at age 16. The majority of the research on alcohol consumption among the 1970 cohort has focused on the predictors of consumption in adult life. Research looking at the impact of alcohol consumption on later outcomes has been relatively limited. One exception is Viner & Taylor's (2007) paper exploring the effects of teenage binge drinking in 1986 on adult outcomes. At sixteen almost a fifth (18%) of respondents reported binge drinking in the previous two weeks. Adolescent binge drinking was found to be significantly associated with a range of adverse adult

outcomes including later alcohol dependence, drug use, homelessness, criminal convictions, lack of qualifications and lower adult social class. Socioeconomic background is controlled using a binary measure of maternal education and a three category paternal occupational class classification.

A descriptive account of drinking patterns among the BCS70 cohort at age 34 is provided by Elliott & Dodgeon (2007). The paper makes comparisons with drinking patterns of the 1958 cohort at the age of 33. Although the 1970 cohort report drinking more frequently than the 1958 cohort did at a similar age, there is only a modest increase in the average number of units of alcohol consumed per week for women and no increase for men.

Several studies have examined the link between education and mental ability, and later life alcohol intake and problems. Batty et al (2008) found that higher childhood mental ability was related to alcohol problems and higher alcohol intake in adult life. Similarly, Huerta & Borgonovi (2010) found that higher educational attainment was associated with increased odds of daily alcohol consumption and problem drinking in adulthood, especially for women. However, De Coulon et al (2010) report that those with lower-level qualifications were more likely to be classified as 'heavy drinkers' (as measured by units of alcohol consumed per week).

At age 16, study members answered a series of questions about their expectations relating to alcohol, that is whether they felt that alcohol made them less shy, more chatty or happy. Two papers by Cable & Sacker (2007 and 2008) and a paper by Patrick et al (2010) have examined the link between these adolescent attitudes and alcohol use and misuse in later life. These three papers all found that adolescents with positive views of the disinhibiting effects of alcohol were at significantly greater risk of heavy drinking and alcohol misuse in later life. Additionally, Cable & Sacker (2008) found that all men who drank alcohol in adolescence were at increased risk of alcohol misuse in later life, whereas among women the increased risk was limited to those who drank frequently in adolescence. Cable & Sacker's work does not control for social background, while Patrick et al include occupational social class only.

The impact of spending time within the care system during childhood on a range of adult outcomes was examined by Dregan et al (2011 and 2012). Although spending time within the care system was associated with many adverse outcomes in adulthood, the researchers did not find any significant association with adult alcohol problems.

A working paper by Percy & Iwaniec (2008) sought to examine the antecedents of hazardous levels of drinking during adolescence. Hazardous drinking at age 16 was found to be significantly more common among boys, those whose mothers drank during pregnancy, those with higher BMI at 10 and those who exhibited high levels of extraversion and anti-social behaviour at age 10. There was little association between adolescent drinking behaviour and child cognitive ability and performance at age 10, family socioeconomic status, social characteristics (parental interest in education, child disclosure, peer isolation, and locus of control) at age 10, and contact with social services.

Smoking

Mothers' smoking during pregnancy was reported at the birth study. The cohort members have been asked about their own smoking from the age of ten.

Research on smoking using BCS70 falls into three broad categories:

1. Examining the effect of parental smoking on study members, and in particular maternal smoking during pregnancy
2. Examining the factors that predict smoking among study members
3. Examining the impact of study members' smoking

The effect of parental smoking and maternal smoking during pregnancy

Rush & Cassano (1983) used BCS70 to examine the joint associations between social class and maternal smoking during pregnancy on perinatal outcomes. They demonstrated that the reductions in birth weight associated with smoking during pregnancy barely differed by class, but that increased rates of perinatal mortality were found only among those from lower social classes.

Several papers have highlighted the association between maternal smoking and respiratory problems in children. For example, Neuspiel et al (1989) showed that the incidence of wheezy bronchitis at age 10 increased as mothers smoked more cigarettes, and Taylor & Wadsworth (1987) showed that maternal smoking (although not paternal smoking) significantly increased the incidence of bronchitis and admission to hospital for lower respiratory tract illness during the first five years of life.

The relationship between maternal smoking and other childhood health problems have also been examined. For example, Bennett & Haggard (1998) showed that maternal smoking was associated with a higher prevalence of hearing problems and ear discharge at age five. Greenwood et al (1998) found no link between smoking during pregnancy and febrile convulsions or afebrile seizures during childhood. Butland et al (1997) investigated the increase in hay fever and eczema among 16-year-olds between the 1958 and 1970 cohorts. They found that higher social class, breastfeeding and older maternal age were linked to a higher risk of hay fever and eczema, while an increase in the number of older siblings, and maternal smoking during pregnancy were linked to a reduced risk of both hay fever and eczema. In other words, factors which typically predict poor general health and reduced life chances, including maternal smoking, appear to predict reduced risk in the case of eczema and hay fever.

A link between parental smoking and the dietary habits of study members at age 16 was demonstrated by Crawley & While (1996). Teenagers from households where parents smoked were found to have lower intakes of fibre, vitamin C, vitamin E, folates and magnesium, regardless of whether they smoked themselves.

The impact of smoking during pregnancy on the onset of conduct problems was examined by Maughan et al (2001). They showed a strong dose-response for both boys and girls, but

after controlling for subsequent maternal smoking suggested that the prime risk for early onset of conduct problems may be associated with *persistent* maternal smoking rather than smoking during pregnancy *per se*.

Research using BCS70 has also demonstrated that the effects of maternal smoking during pregnancy can endure into adulthood. For example, Cheung (2002) demonstrated an association between maternal smoking and psychological and somatic distress at age 30, and Montgomery et al (2005) showed that smoking during pregnancy was associated with bulimia in offspring at age 30.

Predictors of smoking

Several papers have examined the relationship between levels of education and intelligence, and smoking. Batty et al (2007) showed that higher IQ scores at ages 5 and 10 were associated with a lower prevalence of smoking at age 30, and also increased the likelihood of having given up smoking by this age. Similarly Gale et al (2009) showed that higher levels of intelligence in girls reduced the likelihood of smoking during pregnancy. A report by De Coulon et al (2010) examined the link between human capital (as measured by education and basic skills) and smoking in adulthood (as well as drinking and body weight). At age 34, human capital was found to have a significant (negative) impact on the onset of smoking but less impact on the amount of cigarettes smoked.

Roberts et al (2005) demonstrated a link between maternal smoking and smoking among female offspring, but not male offspring. Feinstein et al (2006) examined the impact of leisure activities at age 16 on adult outcomes at 30 and found that youth club participation was associated with higher take-up of smoking. Spending time in care before the age of 16 has also been shown to be predictive of adult smoking (Dregan et al 2011 and 2012).

Biological predictors of smoking have also been examined. For example, Charlton & While (1995) found that those with lower pulse rates and blood pressure at age 10 were more likely to smoke at age 16.

Finally, Gale et al (2008) studied the effect of locus of control – the extent to which one feels in control of one's life – at age 10 on a range of adult outcomes. Although a higher childhood locus of control was found to be protective against many adverse adult outcomes, no significant association with adult smoking was found.

The effect of study members' smoking

Research into the effects of smoking among study members has been more limited. Charlton & While (1996) found that smoking prior to the age of 16 was associated with menstrual problems at age 16. Crawley & While (1995) explored the effect of smoking on dietary choices at 16 and found differences between those who smoked and those who did not, including that smokers consumed more alcohol, and less fibre, thiamine and vitamin C than non-smokers. These differences between teenage smokers and non-smokers were very similar to those found between teenagers from households where parents smoked and those where they did not.

Immunisation and vaccination

Information on immunisations is included in the data for age 5, 10 and 16, and a number of studies examine the effects of immunisation. Silfverdal et al (2007) show that the timing of intervals between pertussis (whooping cough) vaccinations affects their efficacy. Lewis et. al. (1998) unpack the relationship between birth order, measles vaccination and infection, and hay fever, and find that infection, vaccination, and the presence of older siblings are all associated with a reduced risk of hay fever. Morris et. al. (2000) examine the link between measles vaccine status at age five and inflammatory bowel disease, and find no statistically significant link between measles vaccination and Crohn's disease, ulcerative colitis or diabetes. Pollock (1993) discussed the social epidemiology of chickenpox in the 1958 and 1970 cohorts and found that having chickenpox by the age of 10 years was reported to be more common in the children of advantaged families (higher social class, higher parental education levels), with a higher prevalence in those parts of the United Kingdom normally associated with affluence, such as the South East and South West of England, and lower rates in Wales and Scotland.

Sight

The age 10 survey included visual assessments, and this generated a number of publications on vision, most of which were published during the 1980s. Stewart-Brown & Haslum (1988) detailed the prevalence of blindness and partial sightedness, and found congenital cataract or nystagmus to be the principal causes. They also detailed whether the children were registered blind/partially sighted or not, and if they attended a school for the blind/partially sighted or not. The majority of partially-sighted children attended mainstream school. Stewart-Brown & Butler (1985) also looked at the prevalence of defects of visual acuity and found that severe visual defects had declined between the 1958 and 1970 cohorts. Stewart-Brown (1985) looked at the extent of over prescribing of spectacles and found that as many as one in five children with spectacles had no visual defect and a further 15 to 20 per cent had very minimal impairment. The findings are discussed in terms of financial implications. Rudnicka et al (2008) looked at which early life factors were associated with myopia and found a positive association (i.e. increased risk) with higher parental education levels, female gender and higher maternal age and a reduced risk with older siblings, but no significant link to breastfeeding. Stewart-Brown, Haslum & Howlett (1988) compared cognitive, education and sporting outcomes for children with and without visual impairment. They supported other evidence that children with myopia had relatively high cognitive performance, whereas children with amblyopia (lazy eye) had relatively low cognitive performance. Mothers of children with visual impairment perceived them to be less able at sport than their peers, but visual-motor skills assessment results did not show any differences.

Hearing / ear disease

Audiometry was included in the study at the ages of 10 and 16. Hearing and ear problems were also reported at age 5, 10, 16, 30 and 34. Three papers look at childhood hearing impairment, of these, two papers by Bennett & Haggard (1998, 1999) concentrate on risk

factors for childhood middle ear disease and conclude that after controlling for socioeconomic conditions, being male, attending day care, and having a mother who smoked were all associated with hearing difficulties at age five. The second paper looks at the developmental effects of middle ear disease. After controlling for both social class and mother's depression, middle ear disease was most strongly associated with behaviour and language difficulties at age five, and remained significantly associated with outcomes at age 10. The third paper by Montgomery et al (2010) looked at associations between childhood hearing impairment (age 10) and obesity in childhood (age 10) and adulthood (age 34), and found a positive association which was statistically significant among women only.

Childhood cancer

Two papers report on risk factors for childhood cancer by age 10 (Golding & Greenwood 1995; Golding et al 1990). Thirty-three children who had developed cancer by age 10 were identified from the full sample. Logistic regression adjusting for social class found substantial and significant associations with maternal smoking during pregnancy and intramuscular vitamin K administered to the cohort child in the first week of life. It is suggested that intramuscular (as opposed to oral) vitamin K should therefore be avoided.

Accidents, injuries and hospitalisations

The majority of papers on this topic were published in the 1980s and were concerned with incidences in childhood.

Golding (1983) found that the tendency of some children to be prone to repeated accidents was not related to social class, but was linked to maternal age (younger mothers had more accident prone children) and maternal heavy smoking. The relationship between childhood behaviour and accidents was the main theme in three papers (Bijur 1984; Bijur et al 1986; Bijur et al 1988a). Abstracts were not available for two of these papers, but Bijur et al (1986) showed aggressive behaviour was associated with all accidents and injuries, overactivity with injuries but not hospitalisation, and high overactivity and aggression scores with increased hospitalisation. Bijur (1988b) looked at the consistency of experiencing accidents or injuries over time and reported that 3 or more injuries before age five was very predictive of having 3 or more accidents/injuries between ages 5 to 10. Other risk factors reported were being a boy, behaviour problems, and having a young mother or many siblings. Bijur et al (1988c) also found family size and birth order to be associated with accidents resulting in hospitalisation, but not accidents in general. Taylor et al (1983) found teenage motherhood increased risk of hospitalisation, especially following an accident, even after controlling for measures of social background and biological risk factors. Stewart-Brown et al (1986) also found young motherhood together with large family size and family disruption to be significantly associated with hospital admission. Wadsworth et al (1983) also linked family type – single parent or step-families – with hospital admission.

Bijur et al (1990) explored the behavioural sequelae (consequences) of mild head injury (MHI) before age five. After adjustment for control factors, children with MHI did have higher hyperactivity scores at age 10, but the conclusion was that the small magnitude of the hyperactivity association coupled with the overall negative results suggests that mild head

injury in school-aged children does not have an adverse effect on global measures of cognition, achievement, and behaviour one to five years after injury.

Batty et al (2007) assesses childhood mental ability and accidents in adulthood, revealing a complex relationship with non-fatal accidents, which was different for men and women. After adjustment for socio-economic position, higher childhood IQ remained associated with increased risk of sporting and unspecified accidents for women; higher childhood IQ in men remained associated with an increased risk of accidents at home or in unspecified circumstances.

Cognition-Language

The BCS70 is rich in cognitive tests. A number of cognitive tests were administered in 1975, 1980 and 1986. There was also a 22-month subsample with cognitive tests. Numeracy and literacy were assessed in 2004. The 1986 vocabulary assessment was repeated in 2012. Many papers have examined cognition using BCS70, but we restrict our focus here to those with a distinctively medical focus. Law et al (2009, 2012) and Schoon et al (2010a, 2010b) relate poor language (vocabulary) performance at age five with a range of poor outcomes in adulthood – namely, psychosocial adjustment, literacy and employment. Parsons et al (2011) shows the positive outcomes associated with improvement of competent reading at age 10 among those with poor language development at age five.

Montgomery et al (2012) looked at the relationship between height (at 22 months and 5 years) and recall of digits (age 10), and find that greater height is linked to higher scores, suggesting that some exposures may influence both height and cognition.

Nicholls et al (2012) found that adverse birth factors were important for cognitive ability but not handedness and, by implication, cerebral lateralisation. The paper also suggests a link between left-handedness and reduced cognitive ability. Goodman (2012) also looked at handedness, brain structure and human capital outcomes, concluding that ‘lefties’ have lower cognitive scores, more emotional and behavioural problems and are lower paid in adult life. Leask & Crow (2006) explored hemispheric specialisation.

Haslum (1988) has reported on the significant relationship between hospital admissions and length of hospitalisation on vocabulary development at age five, and maths and reading attainment at age 10. There was also a relationship with behaviour scores at age 10. The author argues that these findings support the need to develop the hospital education service.

Asthma

Mother’s, father’s, siblings’ and cohort member’s asthma were reported in 1975, and the cohort member’s own asthma has been reported on in subsequent waves. Park et al (1986) show that among those who experienced wheezing before age five, most (80%) were clear by age 10, but that multiple attacks before age five were related to the experience of wheezing at age 10. Neuspiel et al (1989) showed a significant increase in the experience of wheezing at age 10 among children whose mothers smoked, even after controlling for social background and disadvantaged living conditions. Lewis et al (1996) showed a big increase

(70%) in the proportion of 16-year-olds with asthma between the 1958 and 1970 cohorts, but that the increase was largely unexplained in terms of risk factors. Sly (1999) showed increases in the prevalence in both allergic rhinitis and asthma in a number of settings – in the UK using the 1958 and 1970 cohorts – and found that there was a strong relationship between childhood and adult experience. Hancox et al (2012) showed risk factors for the persistence of asthma into adulthood include being female and personal smoking, but not passive smoking, whereas Shaheen et al (1999) showed that impaired foetal growth and adult adiposity were also risk factors for adult asthma. Turner (2012) describes the strengths and weaknesses of several studies and concludes that there is no single ‘good’ predictor of asthma.

Eczema

Mother’s, father’s, siblings’ and cohort member’s eczema were reported in 1975, and the cohort member’s own eczema has been reported on in subsequent waves. Golding et al (1982a and 1982b) reported on relationship with breastfeeding and general incidence of eczema in the first five years, but no abstract was available for either paper. Taylor et al (1983) showed eczema was reported more often in children who were breastfed and that there was a rising incidence in the reporting of eczema across three British cohorts – 1946, 1958 and 1970. The research also reported the association with breastfeeding in the two later cohorts suggesting that a new environmental agent may be crossing in breast milk.

Golding & Peters (1987a, 1987b) produced two papers (one exploratory, and one more sophisticated building on the first paper) on which risk factors were associated with eczema. They found the dominant risk factors were maternal experience of eczema, hay fever or asthma, higher education levels and having a mother originating from the West Indies or Africa. However, there was also a greater incidence among families living in England in comparison to other UK countries. Butland et al (1997) showed a more than two-fold increase in both eczema and hay fever between the 1958 and 1970 cohorts and explored whether this increase could be explained by changes in certain perinatal and social factors (this paper is also discussed in the section on smoking).

Epilepsy, convulsions and seizures

Several papers specifically address the prevalence, antecedents (Greenwood et al, 1998) and progress made by children who experienced seizures and/or convulsions. Golding & Butler (1983) documented convulsive disorders in childhood, and found that of the 72 cohort infants who had a convulsion in the first week of life, 16 (22%) had died by the end of the first week, and a further five died later. No significant demographic differences were found (according to region, social class etc) in the prevalence of convulsions by age five. Verity & Golding (1991) looked into the risk of epilepsy after febrile convulsions and progress made by the children in their first 10 years. Verity & Golding (1992) also concluded that outcomes after a seizure were determined more by any underlying disease a child had, rather than the seizure itself. Verity and his colleagues also examined the progress of children who suffered febrile convulsions and epilepsy in Verity et al (1985a, 1985b, 1992 and 1998).

Depression and emotional wellbeing

The BCS70 includes maternal malaise in childhood and repeated measures of the cohort member's malaise throughout adult life. Our review found many papers on adolescent and/or adult mental wellbeing. The measures primarily used are the Malaise, General Health Questionnaire (GHQ) and the Rutter behaviour scale (conduct problems, hyperactivity and emotional problems). Cross-cohort comparisons show both the increase in prevalence of mental wellbeing problems over time (Collishaw et al 2004, 2010; Hagell 2012), but also the strength and stability of a number of relationships with certain predictors of emotional wellbeing. For example:

- poor child-parent relationships (Stewart-Brown et al 2005; Morgan et al 2012) have a negative influence on adult outcomes after controlling for mental wellbeing
- intelligence at age 10 was associated with a reduced risk of depression at age 30 (Gale et al 2009)
- higher cognitive scores and good behavioural adjustment were important protective factors for symptoms of depression and predicted other positive health outcomes (Mensah & Hobcraft 2008).

Gore Langton et al (2011) found there to be an increasing income differential in adolescent emotional problems between the 1958 and 1970 cohorts and the later British Child and Adolescent Mental Health Surveys.

The intergenerational transmission of poor mental wellbeing across three generations was discussed by Johnston et al (2011). Several papers discuss intergenerational transmission across two generations, specifically the relationship between maternal depression and child behaviour and other outcomes (Osborn 1984, 1989, 1990). A cohort member's own depression and wellbeing in adolescence or adulthood has been the focus of papers by Flouri & Malmberg (2011) and Das-Munshi et al (2011).

Other papers have focused on relationships between specific risk factors for poor mental wellbeing (holding other factors constant), from the association between smoking, menstrual pain and depression (Charlton & While 1996), to young motherhood (Berrington et al, 2010), being in care (Dregan et al 2011a, 2011b; Dregan & Gulliford 2012), learning (Feinstein 2002), literacy and numeracy (Parsons & Bynner 2006), participation in sport (Steptoe & Butler 1996), having twins (Thorpe et al 1991), fathering (Flouri 2004, 2005), short gestational age (Matei & Udrea 2011) and low birth weight (Gale & Martyn 2004).

Risk factors for mortality

Six papers specifically looked at risk factors associated with perinatal or adult mortality. Rush & Cassano (1983) found that maternal smoking was associated with reduced birth weight across classes, but it was only associated with increased perinatal mortality among working class women. Golding et al (1986) found perinatal mortality was considerably elevated among the children of mothers who were divorced, separated or widowed. Golding & Peters (1988) refuted the view that hospital confinements are more dangerous than home births. Although finding mortality was three times higher among births in a consultant unit

compared with births delivered elsewhere, this was much lower when taking into account the transfer of women intending to deliver elsewhere to a hospital due to complications or risk factors. Barker et al (1989, 1990) found that 10-year-olds and parents living in areas of high cardiovascular mortality were shorter and had higher resting pulse rates. They found systolic blood pressure to be inversely related to birth weight – independent of gestational age – and could this be attributed to reduced foetal growth. Batty et al (2007) related mental ability in childhood to risk factors (age 30) associated with premature mortality. They found evidence that higher IQ in childhood was associated with a reduced risk of smoking, hypertension and obesity, with these gradients attenuated after controlling for measures of socio-economic markers across the life course.

General health and other topics

Several texts report on a range of health measures – for example Marmot (2010), Butler (1980), Butler et al (1982). Golding and Fogelman (1989) compare the childhood circumstances and health of the 1958 and 1970 cohorts. They find striking differences in health behaviour, for example 41% of the 1970 cohort mothers smoked throughout pregnancy compared to 29% of the 1958 mothers. 68% of the 1958 children had been breast fed, compared to 37% of the 1970 cohort. Immunisation led to a reduction in measles by age 10 to 11 from 92% for the 1958 children to 50% for the 1970 children. Bartley et al (2002) specifically report on the health status of women. Case & Paxson (2006, 2008, 2010) link childhood health with adult health measures, concentrating on causes and consequences of poor health. They use height as an indicator of general health in childhood and report favourable IQ and employment outcomes. Blanden et al (2010) quantify the economic cost of growing up poor, including the poorer health and reduced wellbeing experienced by a relatively high proportion of those growing up poor.

Health behaviours, for example healthy eating, exercise, smoking and drinking alcohol, are discussed in six papers. Healthy behaviour is associated with family background and other measures of socio-economic advantage (Montgomery & Schoon 1997; Schoon & Parsons 2003; Ely et al 2000; Cutler & Lleras-Muney 2010). Sabates & Parsons (2012) found poor basic skills to be related to poor self-reported health, long-standing illness and smoking practices at age 38. Pollock (1989) found the health behaviour of a cohort member's mother to carry long-term consequences for her children.

Two papers concentrate on infant sleeping difficulties and subsequent development (Golding & Fedrick 1986) and longer-term associations (Pollock 1992). The relationship between Sudden Infant Death Syndrome (SIDS) and other medical and social characteristics is explored by Golding & Peters (1985), who find that children at risk of SIDS are also at risk of non-accidental injuries, hospital admissions, social disruption and environmental disadvantage.

The topics of other papers included in this review covered:

- the hygiene hypothesis and the rise in acute appendicitis (Barker et al 1988)
- the prevalence of cerebral palsy (Emond 1989)
- the care received by cohort members birth by their marital status (Henriques et al 1986)
- the effect an ill child has on the parent's marriage (Fertig 2004)
- the link between an abusive or neglectful parent-child relationship and the child reporting 3 or more health problems or illnesses in adulthood (Stewart-brown et al, 2005)
- the impact of a child/sibling death across several outcomes for both parent and cohort member. The cohort member is more likely to experience wheezing (after controlling for social disadvantage) and the mother is more likely to score higher on the Malaise inventory, to be a single parent and to smoke during the next pregnancy (Baumer et al, 1988)
- the relationship between the initial care of a newborn and later hay fever (Montgomery et al 2000).

Conclusions

We have found a substantial set of literature using the BCS70 data for health research. A thorough medical examination on the cohort members at age 10 led to relatively high research output on medical topics during the 1980s. The BCS70 is particularly rich in longitudinal data on certain risk factors such as smoking and alcohol, and outcomes such as malaise, and this has been exploited by research on the BCS70 members in adulthood.

A number of suggestions for future work arise from this review.

First, opportunities for cross-disciplinary work and work which is informed by knowledge of the intersection between social and medical science have been insufficiently exploited so far. In particular, a large number of papers use only rather basic controls for socio-economic background, for example only controlling for fathers' Registrar-General's occupational social class at a given wave of the study, despite the availability of data on both parents' educational level, grandparents' social class, housing tenure and income, as well as other relevant variables, many of them captured at more than one wave. Where, as is often the case, social background is a likely powerful confounder of scientific results, controlling for social background in a crude way may lead to spurious findings which could have been avoided by exploiting the available rich data more fully. In addition, there is scope to use the BCS70 data to develop a fuller understanding of health inequalities and the interaction between health inequalities and inequalities in other domains.

Second, there is scope for more longitudinal work examining the consequences of early health and health behaviours. For example, we would be keen to see longitudinal research building on the interesting cross-sectional research on exercise (Steptoe & Butler 1996) and diet (Crawley et al) in adolescence.

Finally, it is unfortunate that there has been no objective medical assessment of the BCS70 members since they were aged 16 in 1986, as this has clearly limited the scope of health research on later waves of the study. It would be most desirable to address this in future waves. The opportunity to build on the objective health measures in early life by repeating them in future waves should not be missed.

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Appendix: Bibliography

OVERWEIGHT AND OBESITY

CRAWLEY, H and PORTIDES, G. (1995)
Self-reported versus measured height,
weight and body mass index amongst 16-17
year old British teenagers. International
Journal of Obesity, 19, 579-584.

OBJECTIVE:

To examine the relationships between reported and measured height and weight in a teenage population group, and to assess the impact this may have on estimates of overweight.

DESIGN:

Data were taken from a sample of teenagers from the 1970 Birth Cohort Study. Multivariate normal regression was used to model differences between self-reported and measured height and weight, using both BMI and a number of other personal and demographic variables to examine influences on reporting differences.

RESULTS:

Tall, thin individuals were more likely to under-report their height and shorter, fatter individuals to overestimate their height and under-estimate their weight. Self-reported height and weight data when used to calculate BMI would result in a lower estimate of overweight teenagers. Self-assessment of body fatness, (but no other personal or demographic variable), was influential on the height and weight reporting of females in this study.

CONCLUSION:

Self-reported height and weight data from a teenage population should be used with caution, particularly if classifying individuals by BMI or when using weight measurements to estimate energy requirements.

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| <p>CRAWLEY, H.F and WHILE, D. (1995) The diet and body weight of British teenage smokers at 16-17 years. European Journal of Clinical Nutrition, 49, 904-914.</p> | <p>OBJECTIVE:</p> <p>To examine the influence of teenage smoking habits on nutrient intake, food choice and body size.</p> <p>DESIGN:</p> <p>Data was collected cross-sectionally: smoking habits were evaluated by questionnaire; heights and weights were measured and dietary intakes were quantitatively assessed via 4-day unweighed dietary diaries.</p> <p>SUBJECTS:</p> <p>The subjects studied (n = 3430) were participants in the 1970 Longitudinal Birth Cohort, and were nationally distributed throughout Britain.</p> <p>RESULTS:</p> <p>Male and female smokers consumed significantly ($P < 0.005$) more alcohol and less fibre, thiamin and vitamin C than occasional or never smokers. Male smokers also consumed significantly more fat when expressed as a percentage of energy intake, and significantly less non-milk extrinsic sugar ($P < 0.01$) and iron ($P < 0.005$) than occasional or never smokers. Regular and occasional female smokers consumed significantly ($P < 0.005$) less protein and calcium than never smokers, and regular smokers also reported lower intakes of zinc, selenium, riboflavin, carotene and folates ($P < 0.005$) and iodine ($P < 0.01$) than never or occasional smokers. Both male and female smokers were less likely to be consumers of puddings, biscuits and wholemeal bread, but were more likely ($P < 0.005$) to consume alcoholic beverages and coffee. Intakes of chips, alcoholic beverages and coffee were significantly ($P < 0.005$) higher among smokers and intakes of puddings, fruit, fruit juices and breakfast cereals lower. Regular female smokers also consumed significantly ($P < 0.005$) fewer vegetables. Smoking habit did not appear to be related to body size in this cohort.</p> <p>CONCLUSION:</p> <p>The diets of teenage smokers, particularly teenage girls, appear to be significantly different to those of non-smokers, but smoking was not related to body size. Lower intakes of antioxidant nutrients, fruits, vegetables and cereals by teenage smokers are of particular concern.</p> |
| <p>GALE, C. R, BATTY, G. D and DEARY, I. J. (2008) Locus of Control at Age 10 Years and Health Outcomes and Behaviors at Age 30 Years: The 1970 British Cohort Study. Psychosomatic Medicine, 70(4), 397-403.</p> | <p>Objective: To examine the relationship between locus of control at age 10 years and self-reported health outcomes (overweight, obesity, psychological distress, health, and hypertension) and health behaviors (smoking and physical activity) at age 30, controlling for sex, childhood IQ, educational attainment, earnings, and socioeconomic position.</p> <p><i>METHODS:</i></p> <p>Participants were members of the 1970 British Cohort Study, a national birth cohort. At age 10, 11,563 children took tests to measure locus of control and IQ. At age 30, 7551 men and women (65%) were interviewed about their health and completed a questionnaire about psychiatric morbidity.</p> |

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| | <p>RESULTS:</p> <p>Men and women with a more internal locus of control score in childhood had a reduced risk of obesity (odds ratio, 95% CI, for a SD increase in locus of control, 0.86, 0.78-0.95), overweight (0.87, 0.82-0.93), fair or poor self-rated health (0.89, 0.81-0.97), and psychological distress (0.86, 0.76-0.95). Women with a more internal locus of control had a reduced risk of high blood pressure (0.84, 0.76-0.92). Associations between childhood IQ and risk of obesity and overweight were weakened by adjustment for internal locus of control.</p> <p>CONCLUSION:</p> <p>Having a stronger sense of control over one's own life in childhood seems to be a protective factor for some aspects of health in adult life. Sense of control provides predictive power beyond contemporaneously assessed IQ and may partially mediate the association between higher IQ in childhood and later risk of obesity and overweight.</p> |
| MONTGOMERY, S.M, OSIKA, W, BRUS, O and BARTLEY, M. (2010) Sex differences in childhood hearing impairment and adult obesity. Longitudinal and Life Course Studies, 1(4), 359-370. | <p>Some adult neurological complications of obesity may have early-life origins. Here, we examine associations of childhood hearing impairment with childhood and adult obesity, among 3288 male and 3527 female members of a longitudinal cohort born in Great Britain in 1970. Height and weight were measured at age 10 years and self-reported at 34 years. Audiometry was conducted at age 10 years. The dependent variable in logistic regression was minor bilateral hearing impairment as a marker of systemic effects, while BMI at age 10 or 34 years were modelled as independent variables with adjustment for potential confounding factors including social class, maternal education and pubertal development at age 10 years. Among females, the adjusted odds ratios (and 95% confidence intervals) for hearing impairment at age 10 years were 2.33 (1.36-3.98) for overweight/obesity; and at age 34 years they were 1.71 (1.00-2.92) for overweight and 2.73 (1.58-4.71) for obesity and the associations were not explained by Childhood BMI at age 10 years. There were no consistent associations among males and interaction testing revealed statistically significant effect modification by sex. The dose-dependent associations among females are consistent with childhood origins for some obesity-associated impaired neurological function and the possible existence of a 'pre-obese syndrome'. The accumulation of risks for poorer health among those who become obese in later life begins in childhood. Childhood exposures associated with bilateral hearing impairment are risks for obesity in later life among females.</p> |
| SILVERWOOD, R, LEON, D.A and DE STAVOLA, B.L. (2012) Long-term trends in BMI: are contemporary childhood BMI growth references appropriate when looking at historical datasets? Longitudinal and Life Course Studies, 1, 1. | <p>Background Body mass index (BMI) is the most widely used surrogate measure of adiposity, and BMI z-scores are often calculated when comparing childhood BMI between populations and population sub-groups. Several growth references are currently used as the basis for calculation of such z-scores, for both contemporary cohorts as well as cohorts born decades ago. Due to the widely acknowledged increases in childhood obesity over recent years it is generally assumed that older birth cohorts would have lower BMIs relative to the current standards. However, this reasonable assumption has not been formally tested. Methods Two growth references (1990 UK and 2000 CDC) are used to calculate BMI z-scores in three historical British national birth cohorts (National Survey of Health and Development (1958), National Child Development Study (1958) and British Cohort Study (1970)). BMI z-scores are obtained for each child at each follow-up age using the lambda-mu-sigma</p> |

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| | <p>(LMS) method, and their distributions examined. Results Across all three cohorts, median BMI z-score at each follow-up age is observed to be positive in early childhood. This is contrary to what might have been expected given the assumed temporal increase in childhood BMI. However, z-scores then decrease and become negative during adolescence, before increasing once more. Conclusions The differences in BMI distribution between the historical cohorts and the contemporary growth references appear systematic and similar across the cohorts. This might be explained by contemporary reference data describing a faster tempo of weight increase relative to height than observed in older birth cohorts. Comparisons using z-scores over extended periods of time should therefore be interpreted with caution.</p> |
| <p>TERNOUTH, A, COLLIER, D and MAUGHAN, B. (2009) Childhood emotional problems and self-perceptions predict weight gain in a longitudinal regression model. BMC Medicine, 7, 46.</p> | <p>Background</p> <p>Obesity and weight gain are correlated with psychological ill health. We predicted that childhood emotional problems and self-perceptions predict weight gain into adulthood.</p> <p>Methods</p> <p>Data on around 6,500 individuals was taken from the 1970 Birth Cohort Study. This sample was a representative sample of individuals born in the UK in one week in 1970. Body mass index was measured by a trained nurse at the age of 10 years, and self-reported at age 30 years. Childhood emotional problems were indexed using the Rutter B scale and self-report. Self-esteem was measured using the LAWSEQ questionnaire, whilst the CARALOC scale was used to measure locus of control.</p> <p>Results</p> <p>Controlling for childhood body mass index, parental body mass index, and social class, childhood emotional problems as measured by the Rutter scale predicted weight gain in women only (least squares regression $N = 3,359$; coefficient 0.004; $P = 0.032$). Using the same methods, childhood self-esteem predicted weight gain in both men and women ($N = 6,526$; coefficient 0.023; $P < 0.001$), although the effect was stronger in women. An external locus of control predicted weight gain in both men and women ($N = 6,522$; coefficient 0.022; $P < 0.001$).</p> <p>Conclusion</p> <p>Emotional problems, low self-esteem and an external locus of control in childhood predict weight gain into adulthood. This has important clinical implications as it highlights a direction for early intervention strategies that may contribute to efforts to combat the current obesity epidemic</p> |
| <p>THOMAS, P.W, PETERS, T.J, GOLDING, J and HASLUM, M.N. (1989) Height, weight and blood pressures in ten-year-old children. Human Biology, 61, 213-225.</p> | <p>Multiple regression techniques were used to determine the most efficient combination of height, weight and body mass index in the prediction of systolic and diastolic blood pressures for a national sample of 13,723 10-year-old children. In every analysis an adjustment was made for the depth of sphygmomanometer cuff used when taking the blood pressure. The variables which together best predicted the systolic blood pressures in boys were weight, height and $(\text{height})^2$, and in girls $\text{weight}/(\text{height})^2$ and height. Diastolic blood pressures were predicted best by weight only for boys and by $\text{weight}/(\text{height})^2$ and height for girls. Once these factors had been taken into account there was no difference in blood pressures in those children for whom there were signs of puberty.</p> |

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| <p>THOMAS, P.W, PETERS, T.J, GOLDING, J and HASLUM, M.N. (1989) Weight-for-height in two national cohorts with particular reference to 10-year-old children. Annals of Human Biology, 16(2), 109-119.</p> | <p>The idea of representing obesity or degree of malnutrition using a weight-for-height power index has existed for many years and several authors believe that such an index should be uncorrelated with height. Data from the 1958 National Child Development Study and the 1970 Child Health and Education Study have therefore been used to determine the values of the constant k which lead to the weight-for-height power index $\text{weight}/[\text{height}]^k$ being uncorrelated with height for specific age groups. Different values of k were needed both for the various age groups, and for the two sexes. For boys and girls respectively, the values of k needed at age 7 years were 2.02 and 2.12, at age 10 the values were 2.53 and 2.58, at age 11, 2.53 and 2.50 and at age 16, 2.42 and 1.71. Different values were also needed for West Indians and Asians and pubertal and pre-pubertal children. The relationships between this power index and other measurements of weight-for-height (including $\text{weight}/\text{height}$; $\text{weight}/[\text{height}]^2$--the Quetelet index; $\text{weight}/[\text{height}]^3$--the Ponderal index; relative weight for height, and standardized weight for height), the examining doctor's assessment of obesity and weight and height themselves were investigated for 10-year-old children born in 1970 to determine which of them could be thought of as best at estimating obesity. We found that there was little to choose between the index which was uncorrelated with height (using derived values of the power), and the Quetelet index.</p> |
| <p>VINER, R.M and COLE, T.J. (2006) Who changes body mass between adolescence and adulthood? Factors predicting change in BMI between 16 year and 30 years in the 1970 British Birth Cohort. International Journal of Obesity, 30, 1368-1374.</p> | <p>OBJECTIVE:</p> <p>To examine whether factors common to obesity prevention programmes in adolescence, namely exercise, sedentary activities, eating behaviours and psychological factors, predict change in BMI in 'free-living' adolescents followed into adulthood.</p> <p>DESIGN:</p> <p>Longitudinal national birth cohort study.</p> <p>SUBJECTS:</p> <p>1970 British Birth Cohort: 4461 subjects with data on BMI at 16 years (1986) and 30 years (2000). MEASUREMENTS AND ANALYSIS: BMI z-score (zBMI) at 16 years (measured) and 30 years (self-reported). Obesity defined as BMI exceeding 95th British centile and 28.5 kg/m², respectively. Self-report data on exercise, eating behaviours, dieting and measures of psychological function (depression, psychological distress, self-esteem) at 16 years. Models were produced for the regression of zBMI at 30 years on each variable at 16 years, adjusted for socioeconomic status, sex and zBMI at 16 years.</p> <p>RESULTS:</p> <p>In all, 467 (8.2%) were obese at 16 years and 730 (16.4%) were obese at 30 years. Of those obese at 16 years, 60.7% were also obese at 30 years. Loss of zBMI between 16 and 30 years was predicted by female sex ($P=0.01$), higher social class ($P<0.0001$) and higher frequency of playing sport, although this was of borderline significance ($P=0.05$). Increase in zBMI between 16 and 30 years was predicted by 4 or more hours per day of sedentary activities ($P=0.01$), eating takeaway meals twice or more per week ($P=0.009$), consuming two or more carbonated drinks per day ($P=0.04$) and a history of dieting to lose weight ($P=0.04$).</p> <p>CONCLUSION:</p> |

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| | <p>These data from 'free-living' adolescents followed into adult life support the importance of known risk factors such as reduction of sedentary behaviours and reduction of unhealthy eating patterns (consumption of carbonated drinks and takeaway foods, dieting) in the prevention of the persistence of obesity from childhood into adult life.</p> |
| <p>VINER, R.M and COLE, T.J. (2005) Television viewing in early childhood predicts adult body mass index. Journal of Pediatrics, 147(4), 429-435.</p> | <p>OBJECTIVES:</p> <p>To examine the effects of duration, timing and type of television (TV) viewing at age 5 years on body mass index (BMI) in adult life.</p> <p>STUDY DESIGN AND METHODS:</p> <p>1970 British Birth Cohort, followed up at 5 (N=13,135), 10 (N=14,875), and 30 years (N=11,261).</p> <p>OUTCOME MEASURES:</p> <p>Weekday and weekend TV viewing at 5 years, type of programs, and maternal attitudes toward TV at age 5 years. BMI z-score at 10 and 30 years.</p> <p>RESULTS:</p> <p>Mean daily hours of TV viewed at weekends predicted higher BMI z-score at 30 years (coefficient=0.03, 95% CI: 0.01, 0.05, P=.01) when adjusted for TV viewing and activity level at 10 years, sex, socioeconomic status, parental BMIs, and birth weight. Each additional hour of TV watched on weekends at 5 years increased risk of adult obesity (BMI > or =30 kg/m²) by 7% (OR=1.07, 95% CI 1.01, 1.13, P=.02). Weekday viewing, type of program and maternal attitudes to TV at 5 years were not independently associated with adult BMI z-score.</p> <p>CONCLUSIONS:</p> <p>Weekend TV viewing in early childhood continues to influence BMI in adulthood. Interventions to influence obesity by reducing sedentary behaviors must begin in early childhood. Interventions focusing on weekend TV viewing may be particularly effective.</p> |
| <p>VINER, R.M and COLE, T.J. (2005) Adult socioeconomic, social and psychological outcomes of childhood obesity: findings from a national birth cohort. British Medical Journal, 330(7504), 1354.</p> | <p>Objectives To assess adult socioeconomic, educational, social, and psychological outcomes of childhood obesity by using nationally representative data.</p> <p>Design 1970 British birth cohort.</p> <p>Participants 16 567 babies born in Great Britain 5-11 April 1970 and followed up at 5, 10, and 29-30 years.</p> <p>Main outcome measures Obesity at age 10 and 30 years. Self reported socioeconomic, educational, psychological, and social outcomes at 30 years. Odds ratios were calculated for the risk of each adult outcome associated with obesity in childhood only, obesity in adulthood only, and persistent child and adult obesity, compared with those obese at neither period.</p> <p>Results Of the 8490 participants with data on body mass index at 10 and 30 years, 4.3% were obese at 10 years and 16.3% at 30 years. Obesity in childhood only was not associated with adult social class, income, years of schooling, educational</p> |

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| | <p>attainment, relationships, or psychological morbidity in either sex after adjustment for confounding factors. Persistent obesity was not associated with any adverse adult outcomes in men, though it was associated among women with a higher risk of never having been gainfully employed (odds ratio 1.9, 95% confidence interval 1.1 to 3.3) and not having a current partner (2.0, 1.3 to 3.3).</p> <p>Conclusions Obesity limited to childhood has little impact on adult outcomes. Persistent obesity in women is associated with poorer employment and relationship outcomes. Efforts to reduce the socioeconomic and psychosocial burden of obesity in adult life should focus on prevention of the persistence of obesity from childhood into adulthood.</p> |
| <p>VINER, R.M and COLE, T.J. (2005) Television viewing in early childhood predicts adult body mass index. Journal of Pediatrics, 147(4), 429-435.</p> | <p>Objectives</p> <p>To examine the effects of duration, timing and type of television (TV) viewing at age 5 years on body mass index (BMI) in adult life.</p> <p>Study design and methods</p> <p>1970 British Birth Cohort, followed up at 5 (N = 13,135), 10 (N = 14,875), and 30 years (N = 11,261).</p> <p>Outcome measures</p> <p>Weekday and weekend TV viewing at 5 years, type of programs, and maternal attitudes toward TV at age 5 years. BMI z-score at 10 and 30 years.</p> <p>Results</p> <p>Mean daily hours of TV viewed at weekends predicted higher BMI z-score at 30 years (coefficient = 0.03, 95% CI: 0.01, 0.05, P = .01) when adjusted for TV viewing and activity level at 10 years, sex, socioeconomic status, parental BMIs, and birth weight. Each additional hour of TV watched on weekends at 5 years increased risk of adult obesity (BMI ≥ 30 kg/m²) by 7% (OR = 1.07, 95% CI 1.01, 1.13, P = .02). Weekday viewing, type of program and maternal attitudes to TV at 5 years were not independently associated with adult BMI z-score.</p> <p>Conclusions</p> <p>Weekend TV viewing in early childhood continues to influence BMI in adulthood. Interventions to influence obesity by reducing sedentary behaviors must begin in early childhood. Interventions focusing on weekend TV viewing may be particularly effective.</p> |

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| <p>WATTS, G. (2011) In for the long haul. British Medical Journal, 342, d942.</p> | <p>As the National Survey of Health and Development celebrates its 65th year, Geoff Watts examines the value of large cohort studies. (Journalistic piece).</p> |
| <p>WHITE, B, NICHOLLS, D, CHRISTIE, D, COLE, T.J and VINER, R.M. (2012) Childhood psychological function and obesity risk across the lifecourse: findings from the 1970 British Cohort Study. International Journal of Obesity, 36(4), 511-516.</p> | <p>Background: Psychological comorbidities of obesity are well recognised. However, the role of childhood psychological problems in the aetiology of later obesity has been little studied.</p> <p>Design:</p> <p>Secondary analyses of a national birth cohort (1970 British Cohort Study). Analysis: Logistic regression models to predict obesity risk at 26, 30 and 34 years related to hypothesised predictors: maternal and teacher reported child psychological function at 5 and 10 years (general behavioural, conduct, emotional or attentional/hyperactivity problems) and maternal psychological function.</p> <p>Results:</p> <p>General behavioural problems at age 5 years increased the risk of obesity at 30 and 34 years. Persistence of these problems through childhood further increased the obesity risk. Inattention/hyperactivity at 10 years similarly increased risk of obesity at 30 years (adjusted odds ratios (AOR) 1.3). Chronic conduct problems at 5 and 10 years also increased the obesity risk at 30 years (AOR 1.6 (1.1, 2.4) $P < 0.05$). Childhood emotional disorders and maternal psychological function were not associated with adult obesity.</p> <p>Conclusion:</p> <p>Children with early and persistent behavioural problems, particularly conduct problems, hyperactivity and inattention in early and mid-childhood are at an increased risk of obesity in adult life. The promotion of child and adolescent mental health and well-being may form an important part of future obesity prevention strategies. The promotion of healthy eating and activity should form part of secondary prevention and management strategies for children with disruptive behaviour disorders.</p> |
| <p>YU, Z.B, HAN, S.P, CAO, X.G and GUO, X.R. (2010) Intelligence in relation to obesity: a systematic review and meta-analysis. Obesity Reviews, 11(9), 656-670.</p> | <p>We performed a systematic review describing obesity/intelligent quotient (IQ) association, particularly childhood IQ in relation to adulthood obesity. After screening 883 citations from five electronic databases, we included 26 studies, most of medium quality. The weighted mean difference (WMD) of the full IQ (FIQ)/obesity association in the pre-school children was -15.1 ($P > 0.05$). Compared with controls, the WMD of FIQ and performance IQ of obese children were -2.8 and -10.0, respectively ($P < 0.05$), and the WMD of verbal IQ was -7.01 ($P > 0.05$). With increasing obesity, the FIQ in pre-school children declined, with a significant difference for severely obese children and FIQ. In pubertal children, a slightly different effect of FIQ and obesity emerged. Two studies reported an inverse FIQ/obesity association in adults, but it was non-significant after adjusting for educational attainment. Four papers found that childhood FIQ was inversely associated with adult body mass index, but after adjusting for education, became null. Overall there was an inverse FIQ/obesity association, except in pre-school children. However, after adjusting for educational attainment, FIQ/obesity association was not significantly different. A lower FIQ in childhood was associated with obesity in later adulthood perhaps with educational level mediating the persistence of obesity in later life.</p> |

EXERCISE AND NUTRITION

BATTY G.D, DEARY I.J, SCHOON I and GALE C.R. (2007) Childhood mental ability in relation to food intake and physical activity in adulthood: the 1970 British Cohort Study. *Pediatrics*, 119(1), e38-e45.

OBJECTIVE. The purpose of this work was to examine the relation of scores on tests of mental ability in childhood with food consumption and physical activity in adulthood.

METHODS. Based on a cohort of >17000 individuals born in Great Britain in 1970, 8282 had complete data for mental ability scores at 10 years of age and reported their food intake and physical activity patterns at 30 years of age.

RESULTS. Children with higher mental ability scores reported significantly more frequent consumption of fruit, vegetables (cooked and raw), wholemeal bread, poultry, fish, and foods fried in vegetable oil in adulthood. They were also more likely to have a lower intake of chips (French fries), non-wholemeal bread, and cakes and biscuits. There was some attenuation in these associations after adjustment for markers of socioeconomic position across the life course, which included educational attainment, with statistical significance lost in some analyses. Higher mental ability was positively associated with exercise habit, in particular, intense activity (defined by being out of breath/sweaty). The associations between mental ability and these behaviors were similar in both men and women, and they were somewhat stronger for verbal than nonverbal ability.

CONCLUSIONS. It is plausible that the skills captured by IQ tests, such as the ability to comprehend and reason, may be important in the successful management of a person's health behaviors.

[CRAWLEY, H and SUMMERBELL, C. \(1997\) Feeding frequency and BMI among teenagers. *International Journal of Obesity*, 21\(2\), 159-161.](#)

The aim of this study was to examine the relationship between feeding frequency (FFQ) and body mass index (BMI) in a free-living group of teenagers, since recent evidence suggests that this may be an artifact of under-reporting. The data was cross-sectional, and a sample of 731 respondents (M²⁹⁸, F⁴³³) from the 1970 Longitudinal Birth Cohort Study were investigated. An initial significant relationship between FFQ and BMI was found for both males and females. However, the removal of overweight males who were dieting and a group of non-dieting females with BMI<25 who perceived themselves to be overweight negated this relationship for males and females respectively. In conclusion, the apparent relationship between FFQ and BMI observed in this and other free-living studies appears to be an artifact of dieting and dietary restraint rather than simply under-reporting.

[CRAWLEY, H.F. \(1997\) Dietary and lifestyle difference between Scottish teenagers and those living in England and Wales. *European Journal of Clinical Nutrition*, 51\(2\), 87-91.](#)

Objective: To investigate the dietary differences reported by teenagers in Scotland compared with teenagers from elsewhere in Britain, allowing for a range of other demographic, personal and lifestyle variables

Design: Data was taken from the 1970 longitudinal birth cohort study which collected data cross-sectionally at 16±17 y

Setting: The respondents were distributed throughout Britain

Subjects: A sub-sample of 1615 respondents was selected (M⁶⁵⁸, F⁹⁵⁷). The criterion for selection were a completed 4 d dietary diary and a 4 d activity diary and the completion of a number of other questionnaires to provide demographic and lifestyle data by both the respondent and the parent of the respondent

Results: The diets of Scottish teenagers were significantly different to those of teenagers in England and Wales even when allowing for differences in smoking habits, parental smoking, alcohol intake, family size and housing tenure: factors which were also different among the Scottish cohort. Intakes of fibre, magnesium, phosphorous, retinol equivalents, carotene and

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| | <p>riboflavin were significantly lower in Scotland among males and females, as were intakes of non-processed vegetables and non-fried potato, skimmed milks, fat spreads high in polyunsaturates and beer. Scottish teenagers drank more soft drinks and ate more chips and white bread than their counterparts in England and Wales. No differences were noted in intakes of vitamin C and fruit based on regional distribution: lower intakes of fruit in Scotland appeared to be associated with the higher incidence of teenage smoking</p> <p>Conclusions: The diets of Scottish teenagers appeared to be further from current dietary recommendations than the diets of teenagers elsewhere in Britain, but the lower intakes of fruit among Scottish teenagers commonly reported is likely to be associated with teenage smoking rather than living in Scotland itself. Care should be taken when evaluating dietary surveys that known confounding variables are included</p> <p>Descriptors: teenage, nutrient, food, Scotland, smoking</p> |
| <p>CRAWLEY, H.F. (1993) The energy, nutrient and food intakes of teenagers aged 16-17 years in Britain: 1. Energy, macronutrients and non-starch polysaccharides. British Journal of Nutrition, 70, 15-26.</p> | <p>As part of the 16-17 year follow-up of the 1970 longitudinal birth cohort study, The International Centre for Child Studies collected dietary data from a National sample of 4760 teenagers. Dietary intake data were collected in 4 d unweighed dietary diaries, distributed by schools and returned by post. Dietary intake data were quantitatively coded, and the intakes of energy, macronutrients and non-starch polysaccharides (NSP) are reported. Intakes of fat and extrinsic sugars, expressed as a percentage of energy intake, exceeded recent recommendations (Department of Health, 1991), and the intakes of intrinsic sugars, milk sugars and starch, and NSP were considerably lower than recommended. Only 25% of males and 10% of females achieved intakes of 18 g NSP/d. The main food groups contributing fat (YO) to the diets of teenagers (for males and females respectively) were meat and meat products (24.2, 22.1), spreading fats (18.6, 18.1) and cereals and cereal products (18, 17.9 whilst the major sources of sugars (%) were (for males and females respectively) sugar and confectionary (28.2, 26.4), cereals and cereal products (24.5, 23) and beverages (21.9, 21.5). Less than half the cohort drank alcohol during the recording period, and about 6 YO of females drank more than 2 units alcohol/d, and about 6 YO of males drank more than 3 units alcohol/d.</p> |
| <p>CRAWLEY, H.F. (1993) The role of breakfast cereals in the diets of 16-17-year-old teenagers in Britain. Journal of Human Nutrition and Dietetics, 6(3), 205-216.</p> | <p>Dietary data was collected from almost 5000 16–17-year-old teenagers throughout Britain using 4-day unweighted dietary diaries. The data was quantitatively coded and analysed to investigate the role of breakfast cereals in the diets of teenagers. The total daily nutrient intakes of consumers and non-consumers of breakfast cereals have been examined, by both frequency of cereal consumption and type of cereal consumed. Using generalized linear-modelling techniques, the relationships between nutrient intake, region, social class, frequency of breakfast cereal consumption and type of cereal consumed were investigated. Regular consumption of any type of breakfast cereal was associated with a significantly lower intake of fat when expressed as a percentage of energy intake, having allowed for regional or social-class differences. Non-consumers of breakfast cereals had significantly lower intakes of some micronutrients and a significant proportion of those who ate no breakfast cereal failed to achieve the reference nutrient intakes for riboflavin, vitamin B6 and folates. The consumption of breakfast cereals appears to be associated with an increased intake of micronutrients amongst teenagers in Britain, and while these associations may be due to the cereals (and milks consumed with them), they may also be due to the effect that eating cereals has on subsequent feeding during the day. However, this may be important amongst those consuming diets lower in energy or high in foods of low-micronutrient density.</p> |

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| <p><u>CRAWLEY, H.F and SHERGILL-BONNER, R. (1995) The nutrient and food intakes of 16-17-year-old female dieters in the UK. Journal of Human Nutrition and Dietetics, 8(1), 25-34.</u></p> | <p>A group of female teenage dieters was isolated from a larger national dietary survey of teenagers at 16–17 years of age. The dieting group included girls who both claimed to be dieting and who had energy intakes which were considered appropriate for weight loss, based on calculated reported energy intake to estimated basal metabolic rate cut-off points. The nutrient intakes and food choices of dieters (n= 204) were compared with a similar sample of non-dieters (n= 226) from the same cohort group. The mean reported energy intake of the dieters was 1604 kcals/day compared to 2460 kcals/day amongst non-dieters. The intakes of all the macronutrients in g/day were considerably lower amongst dieters, allowing for differences in region and social class, but when expressed as a percentage of energy intake, dieters had significantly lower intakes of fat and higher intakes of protein and intrinsic sugars, milk sugars and starch. No differences were seen in the percentage of energy provided by non-milk extrinsic sugars between the two groups. The intake of all micronutrients was substantially lower amongst dieters, allowing for regional and social class differences, and more than twice as many dieters as non-dieters failed to achieve the reference nutrient intake (RNI) for retinol equivalents, thiamin, riboflavin, folates, vitamin B12, vitamin B6, zinc, copper and selenium. Reported food intake data for the two groups suggest that dieters consumed smaller quantities of most foods, although intakes of items associated with dieting such as low calorie soft drinks, low fat spread, skimmed milk, cottage cheese, yoghurt, salad vegetables, fruit and fruit juice were consumed in equal or greater amounts by dieters. Teenage dieters should be encouraged to include more nutrient-dense foods in their diets such as fortified breakfast cereals and low fat dairy products in order to obtain sufficient micronutrients from a lower calorie intake.</p> |
| <p><u>CRAWLEY, H.F and SUMMERBELL, C.D. (1998) The nutrient and food intakes of British male dieters aged 16-17 years. Journal of Human Nutrition & Dietetics, 11(1), 33-40.</u></p> | <p>Background: There is little information available about the dieting habits of teenage boys. This study aimed to examine the food and nutrient intake of male teenage dieters and compare these with the patterns reported among female dieters.</p> <p>Method: Male dieters aged 16–17 years were isolated from the 1970 Longitudinal Birth Cohort study group. Five hundred and one males who provided a 4-day unweighed dietary diary, height and weight measurements and appropriate background information.</p> <p>Results: Thirty-nine subjects (7.8%) both reported dieting and had a ratio of reported energy intakes to estimated basal metabolic rate measurements of less than 1.35. Dieters were taller and heavier than non-dieters, with mean BMIs of 24.6 and 20.0, respectively, for the two groups. Dieters reported average energy intakes of 9.16 MJ/day compared to intakes of 12.83 MJ/day among non-dieters, and the percentage of energy provided by protein was higher and that provided by NMES lower among dieters. Reported micronutrient intakes were lower among dieters, with calcium, magnesium, zinc, selenium, iodine, vitamin B6, vitamin C and retinol equivalents the nutrients most vulnerable to reduction in energy intakes. Dieters reported lower intakes of most food groups, but reported intakes of alcohol and meat and meat products were not reduced among dieters.</p> <p>Conclusion: Dieters clearly reported energy intakes which were unlikely to represent levels of intake sufficient to maintain existing weight. The nutrient and food intakes reported by the dieters were likely to reflect either true dieting behaviour during the study period, under-reporting or a combination of these effects.</p> |

CRAWLEY, H.F and WHILE, D. (1995) The diet and body weight of British teenage smokers at 16-17 years. *European Journal of Clinical Nutrition*, 49, 904-914.

OBJECTIVE:

To examine the influence of teenage smoking habits on nutrient intake, food choice and body size.

DESIGN:

Data was collected cross-sectionally: smoking habits were evaluated by questionnaire; heights and weights were measured and dietary intakes were quantitatively assessed via 4-day unweighed dietary diaries.

SUBJECTS:

The subjects studied (n = 3430) were participants in the 1970 Longitudinal Birth Cohort, and were nationally distributed throughout Britain.

RESULTS:

Male and female smokers consumed significantly ($P < 0.005$) more alcohol and less fibre, thiamin and vitamin C than occasional or never smokers. Male smokers also consumed significantly more fat when expressed as a percentage of energy intake, and significantly less non-milk extrinsic sugar ($P < 0.01$) and iron ($P < 0.005$) than occasional or never smokers. Regular and occasional female smokers consumed significantly ($P < 0.005$) less protein and calcium than never smokers, and regular smokers also reported lower intakes of zinc, selenium, riboflavin, carotene and folates ($P < 0.005$) and iodine ($P < 0.01$) than never or occasional smokers. Both male and female smokers were less likely to be consumers of puddings, biscuits and wholemeal bread, but were more likely ($P < 0.005$) to consume alcoholic beverages and coffee. Intakes of chips, alcoholic beverages and coffee were significantly ($P < 0.005$) higher among smokers and intakes of puddings, fruit, fruit juices and breakfast cereals lower. Regular female smokers also consumed significantly ($P < 0.005$) fewer vegetables. Smoking habit did not appear to be related to body size in this cohort.

CONCLUSION:

The diets of teenage smokers, particularly teenage girls, appear to be significantly different to those of non-smokers, but smoking was not related to body size. Lower intakes of antioxidant nutrients, fruits, vegetables and cereals by teenage smokers are of particular concern.

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| <p><u>CRAWLEY, H.F and WHILE, D. (1996) Parental smoking and the nutrient intake and food choice of British teenagers aged 16-17 years. Journal of Epidemiology and Community Health, 50(3), 306-312.</u></p> | <p>Study objective - To examine the association between parental smoking habits and the nutrient intake and food choice of teenagers aged 16-17 years, allowing for differences in teenage smoking and the social class and regional distribution of the participants. Design - Data were collected from the 1970 longitudinal birth cohort, cross-sectionally at 16-17 years. The smoking habits of teenagers were evaluated from a questionnaire completed by the subjects themselves, and the smoking habits of parents by interview. The nutrient and food intakes of teenagers were quantitatively assessed using a four day unweighed dietary diary. Setting - The participants were distributed throughout Britain. Participants - A subsample of 1222 males and 1735 females was isolated from respondents to the 1970 birth cohort 16-17 year data collection sweep undertaken in 1986-87. Main results - Parental smoking habits were associated with different dietary patterns among teenagers regardless of whether the teenagers themselves smoked. Dietary differences noted were similar to those observed previously among smokers, with lower intakes of fibre, vitamin C, vitamin E, folates, and magnesium in particular reported among both males and females in households where parents were smokers. These lower intakes were associated with lower intakes of fruit juices, wholemeal bread, and some vegetables. Conclusion - Teenagers who lived with parents who smoked had different nutrient and food intakes to those with non-smoking parents, and teenagers exposed to parental smoking appeared to have similar dietary patterns to teenagers who themselves smoked.</p> |
| <p>GALE C.R, DEARY I.J, SCHOON I and BATTY G.D. (2007) IQ in childhood and vegetarianism in adulthood: the 1970 British Cohort Study (with accompanying editorial). British Medical Journal, 334(7587), 245-248B.</p> | <p>Objective To examine the relation between IQ in childhood and vegetarianism in adulthood.</p> <p>Design Prospective cohort study in which IQ was assessed by tests of mental ability at age 10 years and vegetarianism by self-report at age 30 years.</p> <p>Setting Great Britain.</p> <p>Participants 8170 men and women aged 30 years participating in the 1970 British cohort study, a national birth cohort.</p> <p>Main outcome measures Self-reported vegetarianism and type of diet followed.</p> <p>Results 366 (4.5%) participants said they were vegetarian, although 123 (33.6%) admitted eating fish or chicken. Vegetarians were more likely to be female, to be of higher social class (both in childhood and currently), and to have attained higher academic or vocational qualifications, although these socioeconomic advantages were not reflected in their income. Higher IQ at age 10 years was associated with an increased likelihood of being vegetarian at age 30 (odds ratio for one standard deviation increase in childhood IQ score 1.38, 95% confidence interval 1.24 to 1.53). IQ remained a statistically significant predictor of being vegetarian as an adult after adjustment for social class (both in childhood and currently), academic or vocational qualifications, and sex (1.20, 1.06 to 1.36). Exclusion of those who said they were vegetarian but ate fish or chicken had little effect on the strength of this association.</p> <p>Conclusion Higher scores for IQ in childhood are associated with an increased likelihood of being a vegetarian as an adult.</p> |

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| <p>GOODWIN, L, WHITE, P.D, HOTOPF, M, STANSFELD, S.A and CLARK, C. (2011) Psychopathology and physical activity as predictors of chronic fatigue syndrome in the 1958 British birth cohort: a replication study of the 1946 and 1970 birth cohorts. <i>Annals of Epidemiology</i>, 21(5), 343-350.</p> | <p>Purpose</p> <p>In this study, we investigate whether prospective associations between psychopathology, physical activity, and chronic fatigue syndrome/myalgic encephalomyelitis (CFS/ME) observed in the 1946 and 1970 birth cohorts were replicable in the 1958 British birth cohort.</p> <p>Methods</p> <p>Prospective study using the 1958 British birth cohort, which included 98.7% of births from 1 week in March 1958 in England, Wales, and Scotland. The outcome was self-reported CFS/ME by the age of 42 years, at which point 11,419 participants remained in the study. Psychopathology was assessed by the Rutter scales in childhood and the Malaise Inventory in adulthood. Physical activity was reported by the cohort member, mother and teacher in childhood and adulthood.</p> <p>Results</p> <p>The prevalence of CFS/ME was 1.0% (95% confidence interval [CI] = 0.9–1.3) and the median age of onset was 34 years. Premorbid psychopathology at 23 years (odds ratio [OR] = 1.85, 95% CI = 1.06–3.22) and 33 years (OR = 2.81, 95% CI = 1.28–6.18) significantly increased the odds of developing CFS/ME, supporting the 1946 cohort findings. Childhood psychopathology, sedentary behavior in childhood, and persistent exercise in adulthood were not associated with CFS/ME.</p> <p>Conclusions</p> <p>In cohort studies premorbid psychopathology in adulthood is a replicated risk marker for CFS/ME, whereas premorbid extremes of physical activity are not.</p> |
| <p>MOORE, S.C., CARTER, I. and VAN GOOZEN, S. (2009) Confectionery consumption in childhood and adult violence. <i>British Journal of Psychiatry</i>, 195, 366-367.</p> | <p>Diet has been associated with behavioural problems, including aggression, but the long-term effects of childhood diet on adult violence have not been studied. We tested the hypothesis that excessive consumption of confectionery at age 10 years predicts convictions for violence in adulthood (age 34 years). Data from age 5, 10 and 34 years were used. Children who ate confectionery daily at age 10 years were significantly more likely to have been convicted for violence at age 34 years, a relationship that was robust when controlling for ecological and individual factors.</p> |

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| <p>SACKER, A and CABLE, N. (2006) Do adolescent leisure-time physical activities foster health and well-being in adulthood? Evidence from two British birth cohorts. <i>European Journal of Public Health</i>, 16(3), 331-335.</p> | <p>Background: Calls for public health initiatives to increase adolescent leisure-time physical activity suggest that increasing activity in this age group will reduce social inequalities in health. While the public health benefits of exercise are undisputed, there is little evidence on its role in reducing health inequalities. The paper examines the extent to which adolescent leisure-time physical activity promotes adult health and well-being and explores whether adolescent leisure-time physical activity can act to reduce health inequalities arising from material deprivation during childhood. Methods: This is a longitudinal study of the 1958 British birth cohort followed from age 16 to age 33 years (N = 15 452) and the 1970 British birth cohort followed to age 30 years (N = 14 018). Adult self-rated general health and Malaise Inventory scores are regressed on self-reports of leisure time physical activity. Analyses are conducted separately for men and women controlling for adolescent body mass index (BMI) and psychosocial problems. Results: There was a consistent relationship between leisure-time physical activity in adolescence and psychological well-being ~15 years later for both the cohorts. This relationship was independent of adolescent BMI and psychosocial problems. More physical activity in adolescence predicted better adult self-assessed health in the 1958 cohort only. Leisure-time physical activity did not affect inequalities in health. Conclusions: Policies aimed at increasing participation in leisure-time physical activities in youth may improve population health but are unlikely to prevent the development of social inequalities in health.</p> |
| <p>STEPTOE, A and BUTLER, N.R. (1996) Sports participation and emotional well-being in adolescents. <i>Lancet</i>, 347(9018), 1789-1792.</p> | <p>Background Regular physical activity may have psychological benefits. Our study assessed the association between extent of participation in regular sport or vigorous recreational activity and emotional wellbeing in adolescents aged 16 years.</p> <p>Methods Data were collected from a cohort of adolescents, born between April 5 and April 11, 1970, in England, Scotland, and Wales, who took part in the follow-up assessment at age 16 years. Emotional wellbeing was assessed by the general health questionnaire (GHQ) and the malaise inventory (divided into psychological and somatic subscales). Information was obtained about participation in ten team and 25 individual sports and vigorous recreational activities during the previous year. Non-vigorous recreations, such as darts and snooker, were assessed separately. Social class and health status (recent illness and use of hospital services) were included in our analyses as possible confounding factors. 2223 boys and 2838 girls with a mean age of 16.3 years (SD 0.38) were included in our analysis. Statistical analysis was by multiple linear and logistic regression.</p> <p>Findings The sport and vigorous recreational activity index was positively associated with emotional wellbeing independently of sex, social class, health status, and use of hospital services. These associations were significant for the psychological symptom subscale of the malaise inventory (regression coefficient -0.024, 95% CI -0.036 to -0.011, $p < 0.001$) and the GHQ (odds ratio of emotional distress per unit increase in vigorous physical activity 0.992, 95% CI 0.985-0.998, $p < 0.01$). By contrast, participation in non-vigorous activities was associated with high psychological and somatic symptoms on the malaise inventory.</p> <p>Interpretation We conclude that emotional wellbeing is positively associated with extent of participation in sport and vigorous recreational activity among adolescents. Although causal associations cannot be assumed in this cross-sectional analysis, our results are consistent with experimental evidence that vigorous exercise has favourable effects on emotional state.</p> |

ALCOHOL

BATTY, G.D, DEARY, I.J, SCHOON, I and GALE, C.R. (2008) Childhood Mental Ability and Adult Alcohol Intake and Alcohol Problems: The 1970 British Cohort Study. American Journal of Public Health, 98(12), 2237-2243.

Abstract

OBJECTIVES:

We examined the potential relation of mental ability test scores at age 10 years with alcohol problems and alcohol intake at age 30 years.

METHODS:

We used data from a prospective observational study involving 8170 members of a birth cohort from Great Britain born in 1970. Data included mental ability scores at age 10 years and responses to inquiries about alcohol intake and problems at age 30 years.

RESULTS:

After adjustment for potential mediating and confounding factors, cohort members with higher childhood mental ability scores had an increased prevalence of problem drinking in adulthood. This association was stronger among women (odds ratio [OR](1 SD increase in ability) = 1.38; 95% confidence interval [CI] = 1.16, 1.64) than men (OR(1 SD increase in ability) = 1.17; CI = 1.04, 1.28; P for interaction = .004). Childhood mental ability was also related to a higher average intake of alcohol and to drinking more frequently. Again, these gradients were stronger among women than among men.

CONCLUSIONS:

In this large-scale cohort study, higher childhood mental ability was related to alcohol problems and higher alcohol intake in adult life. These unexpected results warrant examination in other studies.

CABLE, N and SACKER, A. (2007) The role of adolescent social disinhibition expectancies in moderating the relationship between psychological distress and alcohol use and misuse. Addictive Behaviors, 32(2), 282-295.

We examined the effects of adolescent social disinhibition expectancies and adult psychological distress on alcohol use and misuse in adulthood, using the 1970 British Cohort Study data. Multivariate imputation by chained equations filled in incomplete cases for 7023 men and 6896 women. A propensity to heavy alcohol use and misuse was predicted by social expectations of the releasing effects of alcohol acquired in adolescence (adolescent social disinhibition expectancies). Psychological distress at age 30 increased the likelihood of very heavy alcohol use in men and misuse of alcohol in men and women. An absence of adolescent social disinhibition expectancies protects adults from drinking alcohol. Moreover, among men without these expectancies, psychological distress did not predict heavy alcohol use, whereas this association was present among men with expectations of alcohol. Policies that aim to manage adult alcohol use should be initiated in adolescence. Reduction of psychological distress will prevent both men and women from misusing alcohol. (c) 2006 Elsevier Ltd. All rights reserved.

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| <p>CABLE, N and SACKER, A. (2008) Typologies of alcohol consumption in adolescence: predictors and adult outcomes. <i>Alcohol and Alcoholism</i>, 43(1), 81-90.</p> | <p>Abstract — Aims: Data from the 1970 British Cohort Study were used to examine the effects of alcohol expectancies, norms, and openness of communication with parents on typologies of adolescent alcohol use and the subsequent risk of adult alcohol misuse from adolescent use. Methods: Of a population originally defined as all children born in the UK in 1 week of April 1970, 69.4% were interviewed at age 16 and 70.1% at age 30. Missing information was imputed using the multivariate imputation by chained equation (MICE) method, yielding a sample size of 7023 for men and 6896 for women. Four adolescent drinking typologies were defined by frequency and quantity of alcohol consumption at age 16. Results: Positive alcohol expectancies predicted all types of adolescent alcohol use in young men and women. Norms affected frequency of alcohol use over quantity, while openness of communication with parents affected quantity of alcohol use. All men who drank alcohol in adolescence were at risk of alcohol misuse (defined by the CAGE questionnaire) in adulthood, whereas the risk for women was limited to frequent drinkers. Conclusions: Drinking typologies were useful for understanding the mechanisms of adolescent alcohol use. Early prevention may be required to reduce alcohol related problems in later life.</p> |
| <p>DE COULON, A, MESCHI, E and YATES, M. (2010) Education, basic skills and health-related outcomes. NRDC Research Report, May 2010. London: NRDC.</p> | <p>See entry under smoking</p> |
| <p>DREGAN, A , BROWN, J and ARMSTRONG, D. (2011) Do adult emotional and behavioural outcomes vary as a function of diverse childhood experiences of the public care system? <i>Psychological Medicine</i>, 41(10), 2213-2220</p> | <p>See entry under smoking</p> |
| <p>ELLIOTT, J and DODGEON, B. (2007) A descriptive analysis of the drinking behaviour of the 1958 cohort at age 33 and the 1970 cohort at age 34. CLS Working Paper 2007/3. London: Centre for Longitudinal Studies.</p> | <p>This paper provides a comparison of the drinking patterns of members of the 1958 British Birth Cohort at age 33 in 1991 and members of the 1970 British Birth Cohort at age 34 in 2004. In particular the focus is on the relationships between social class, gender and drinking behaviour and how these may have changed over time. In addition we exploit the detailed information available in the cohort studies about the kinds of alcohol that individuals drink to provide a description of how this varies between the two cohorts born twelve years apart. The paper also provides detailed descriptive analyses of the links between frequency of drinking and the number of units drunk for both cohorts. Results suggest that although the 1970 cohort report drinking more frequently than the 1958 cohort did at a similar age, there is only a modest increase in the average number of units of alcohol consumed per week for women and no increase for men. The paper also highlights some possible problems with data on alcohol consumption collected in the 2000 sweep of NCDS and BCS70 and concludes by making some comparisons between data collected in the cohort studies and data collected in the General Household Survey.</p> |

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| <p>HUERTA, M.C and BORGONOV, F. (2010) Education, alcohol use and abuse among young adults in Britain. OECD Education Working Paper No.50, 1 July 2010. Paris: Organisation for Economic Co-Operation and Development.</p> | <p>In this article we explore the relationship between education and alcohol consumption. We examine whether the probability of abusing alcohol differs across educational groups. We use data from the British Cohort Study, a longitudinal study of one week's birth in Britain in 1970. Measures of alcohol abuse include alcohol consumption above NHS guidelines, daily alcohol consumption and problem drinking. Higher educational attainment is associated with increased odds of daily alcohol consumption and problem drinking. The relationship is stronger for females than males. Individuals who achieved high test scores in childhood are at a significantly higher risk of abusing alcohol across all dimensions. Our results also suggest that educational qualifications and academic performance are associated with the probability of belonging to different typologies of alcohol consumers among women while this association is not present in the case of educational qualifications and is very weak in the case of academic performance among males. RESUMÉ</p> |
| <p>PATRICK, M.E, WRAY-LAKE, L, FINLAY, A.K and MAGGS, J.L. (2010) The Long Arm of Expectancies: Adolescent Alcohol Expectancies Predict Adult Alcohol Use. Alcohol and Alcoholism, 45(1), 17-24.</p> | <p>Aims: Alcohol expectancies are strong concurrent predictors of alcohol use and problems, but the current study addressed their unique power to predict from adolescence to midlife. Method: Long-term longitudinal data from the national British Cohort Study 1970 (N = 2146, 59.8% female) were used to predict alcohol use and misuse in the mid-30s by alcohol expectancies reported in adolescence. Results: Cohort members with more positive alcohol expectancies at age 16 reported greater alcohol quantity concurrently, increases in alcohol quantity relative to their peers between ages 16 and 35, and a higher likelihood of lifetime and previous year alcohol misuse at age 35, independent of gender, social class in family of origin, age of alcohol use onset, adolescent delinquent behaviour and age 16 exam scores. Conclusions: Alcohol expectancies were strong proximal predictors of alcohol use and predicted relative change in alcohol use and misuse across two decades into middle adulthood.</p> |
| <p>PERCY, A and IWANIEC, D. (2008) Antecedents of hazardous teenage drinking: analysis of the British Birth Cohort Study. CLS Working Paper 2008/6. London: Centre for Longitudinal Studies.</p> | <p>While the proportion of UK teenagers drinking alcohol has remained relatively constant, the average volume of alcohol consumed by underage drinkers has increased significantly over the last decade or so (Erens & Hedges, 1998; Westlake & Yar, 2006). Such changes in drinking patterns have coincided with other alcohol related transformation, particularly in terms of the development of alcohol brand extensions and premixed drinks, discounted prices and the liberalising of drinking hours, leading to increased opportunities for engaging in “hedonistic consumerism”, where extreme drunkenness is largely tolerated (Brain, 2000; Measham & Brain, 2005).</p> |
| <p>Viner, R and Taylor, B. (2007) Adult outcomes of binge drinking in adolescence: findings from a UK national birth cohort. Journal of Epidemiology and Community Health 61 (10), 902-907.</p> | <p>Aims The aim of the study was to determine outcomes in adult life of binge drinking in adolescence in a national birth cohort.</p> <p>Design and setting Longitudinal birth cohort: 1970 British Birth Cohort Study surveys at 16 years (1986) and 30 years (2000).</p> <p>Participants A total of 11622 subjects participated at age 16 years and 11261 subjects participated at age 30 years.</p> <p>Measurements At the age of 16 years, data on binge drinking (defined as two or more episodes of drinking four or more drinks in a row in the</p> |

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| | <p>previous 2 weeks) and frequency of habitual drinking in the previous year were collected. Thirty-year outcomes recorded were alcohol dependence/abuse (CAGE questionnaire), regular weekly alcohol consumption (number of units), illicit drug use, psychological morbidity (Malaise Inventory) and educational, vocational and social history.</p> <p>Findings</p> <p>17.7% of participants reported binge drinking in the previous 2 weeks at the age of 16 years. Adolescent binge drinking predicted an increased risk of adult alcohol dependence (OR 1.6, 95% CI 1.3 to 2.0), excessive regular consumption (OR 1.7, 95% CI 1.4 to 2.1), illicit drug use (OR 1.4, 95% CI 1.1 to 1.8), psychiatric morbidity (OR 1.4, 95% CI 1.1 to 1.9), homelessness (OR 1.6, 95% CI 1.1 to 2.4), convictions (1.9, 95% CI 1.4 to 2.5), school exclusion (OR 3.9, 95% CI 1.9 to 8.2), lack of qualifications (OR 1.3, 95% CI 1.1 to 1.6), accidents (OR 1.4, 95% CI 1.1 to 1.6) and lower adult social class, after adjustment for adolescent socioeconomic status and adolescent baseline status of the outcome under study. These findings were largely unchanged in models including both adolescent binge drinking and habitual frequent drinking as main effects.</p> <p>Conclusions</p> <p>Adolescent binge drinking is a risk behaviour associated with significant later adversity and social exclusion. These associations appear to be distinct from those associated with habitual frequent alcohol use. Binge drinking may contribute to the development of health and social inequalities during the transition from adolescence to adulthood.</p> |
| SMOKING | |
| <p>BATTY G. D, DEARY I. J, SCHOON I. and GALE C. R. (2007) Mental ability across childhood in relation to risk factors for premature mortality in adult life: the 1970 British Cohort Study. <i>Journal of Epidemiology and Community Health</i>, 61, 997-1003.</p> | <p>Objective: To examine the relation of scores on tests of mental ability across childhood with established risk factors for premature mortality at the age of 30 years.</p> <p>Methods: A prospective cohort study based on members of the British Cohort Study born in Great Britain in 1970 who had complete data on IQ scores at five (N = 8203) or 10 (N = 8171) years of age and risk factors at age 30 years.</p> <p>Results: In sex-adjusted analyses, higher IQ score at age 10 years was associated with a reduced prevalence of current smoking (OR per 1 SD advantage in IQ 0.84; 95% CI 0.80, 0.88), overweight (0.88; 0.84, 0.92), obesity (0.84; 0.79, 0.92), and hypertension (0.90; 0.83, 0.98), and an increased likelihood of having given up smoking by the age of 30 years (1.25; 1.18, 1.24). These gradients were attenuated after adjustment for markers of socioeconomic circumstances across the life course, particularly education. There was no apparent relationship between IQ and diabetes. Essentially the same pattern of association was evident when the predictive value of IQ scores at five years of age was examined.</p> <p>Conclusions: The mental ability–risk factor gradients reported in the present study may offer some insights into the apparent link between low pre-adult mental ability and premature mortality.</p> |

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| <p>BENNETT, K.E and HAGGARD, M.P. (1998) Accumulation of factors influencing children's middle ear disease: risk factor modelling on a large population cohort. <i>Journal Of Epidemiology & Community Health</i>, 52(12), 786-793.</p> | <p>Study objectives—Data were analysed from a large national birth cohort to examine cumulative and interactive prediction from various risk factors for childhood middle ear disease, and to resolve conflicting evidence arising from small and incompletely controlled studies. The large sample size permitted appropriate covariate adjustment to give generality, and permit demographic breakdown of the risk factors.</p> <p>Setting—A large multi-purpose longitudinal birth cohort study of all births in the UK in one week in 1970, with multiple questionnaire sweeps.</p> <p>Participants—Over 13 000 children were entered into the original cohort. Data on over 12 000 children were available at the five year follow up.</p> <p>Main outcome measures—For children at 5 years, parent reported data were available on health and social factors including data on two markers for middle ear disease: the occurrence of purulent (nonwax) ear discharge and suspected or confirmed hearing difficulty.</p> <p>Main results—In those children who had ever had reported hearing difficulty (suspected or confirmed), after control for socioeconomic status, three of the classic factors (male sex, mother's smoking habits since birth, and attending day care) were significantly more frequent. In those who had ever had ear discharge reported, only mother's smoking habit since birth was significantly more frequent. However, it showed an orderly dose response relation. In addition, a derived general child health score was found to be significantly associated with both the middle ear disease markers. Control for this variable in the analysis of those having reported hearing difficulty reduced the effect size of mother's smoking habit, but it remained statistically significant. For reported ear discharge, even after control for the general health score and social index, mother's smoking habits and day care attendance were both significant predictors. Mother's (but not father's) smoking habits and day care attendance were found to be significant risk factors for middle ear disease. Breast feeding effects were weak and did not generally survive statistical control.</p> |
| <p>BUTLAND, B.K, STRACHAN, D.P, LEWIS, S, BYNNER, J, BUTLER, N.R and BRITTON, J. (1997) Investigation into the increase in hay fever and eczema at age 16 observed between the 1958 and 1970 British birth cohorts. <i>British Medical Journal</i>, 315(7110), 717-721.</p> | <p>OBJECTIVE: To investigate whether changes in certain perinatal and social factors explain the increased prevalence of hay fever and eczema among British adolescents between 1974 and 1986. DESIGN: Two prospective birth cohort studies. SETTING: England, Wales, and Scotland. SUBJECTS: 11,195 children born 3-9 March 1958 and 9387 born 5-11 April 1970. MAIN OUTCOME MEASURES: Parental reports of eczematous rashes and of hay fever or allergic rhinitis in the previous 12 months at age 16. RESULTS: The prevalence of the conditions over the 12 month period increased between 1974 and 1986 from 3.1% to 6.4% (prevalence ratio 2.04 (95% confidence interval 1.79 to 2.32)) for eczema and from 12.0% to 23.3% (prevalence ratio 1.93 (1.82 to 2.06)) for hay fever. Both conditions were more commonly reported among children of higher birth order and those who were breast fed for longer than 1 month. Eczema was more commonly reported among girls and hay fever among boys. The prevalence of hay fever decreased sharply between social classes I and V, increased with maternal age up to the early 30s, and was lower in children whose mothers smoked during pregnancy. Neither condition varied significantly with birth weight. When adjusted for these factors, the relative odds of hay fever (1986 v 1974) increased from 2.23 (2.05 to 2.43) to 2.40 (2.19 to 2.63). Similarly, the relative odds of eczema rose from 2.02 (1.73 to 2.36) to 2.14 (1.81 to 2.52). CONCLUSIONS: Taken together, changes between cohorts in sex, birth weight, birth order, maternal age, breast feeding, maternal smoking during pregnancy, and father's social class at birth did not seem to explain any of the observed rise in the prevalence of hay fever and eczema. However, correlates of these factors which have changed over time may still underlie recent increases in allergic disease.</p> |

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| <p>CHARLTON, A and WHILE, D. (1995) Blood pressure and smoking : observations on a national cohort. Archives of Disease in Childhood, 73, 294-297.</p> | <p>The reasons why adult smokers have lower blood pressure than non-smokers have not been determined. It is possible that low blood pressure might precede the onset of smoking. This study investigates this hypothesis in a national cohort study in Britain. Blood pressures and pulse rates taken on a sample of 5019 members of the British Birth Cohort Study (BCS 70) at the age of 10 years were analysed in relation to self reported smoking behaviour at age 16+ years. Prospectively, those children who had lower diastolic blood pressure or pulse rate at age 10 were more likely to have smoked by age 16+ years. Using analysis of variance, pulse rate was significantly related to smoking in young men ($p < 0.001$). Seventy per cent of those with lower pulse (below the 10th centile), 58% with medium pulse, and 52% with the higher pulse (above the 90th centile) had ever smoked by age 16+ years. In young women, pulse rate ($p = 0.003$), diastolic pressure ($p = 0.024$), and systolic pressure ($p = 0.032$) at age 10 were all significantly related to smoking at age 16. This longitudinal study found that lower blood pressure and slower pulse rate were related to the onset of smoking in children. More research is needed on this new observation.</p> |
| <p>CHARLTON, A and WHILE, D. (1996) Smoking and menstrual problems in 16-year-olds. Journal of the Royal Society of Medicine, 89(4), 193-195.</p> | <p>The British Birth Cohort Study (BCS70) is a cohort study which follows all the people born in England, Scotland and Wales in the week of 5-11 April 1970. The data described here were from the postal questionnaires returned by 2181 young women aged between 16 and 16 1/2 in 1986. Thirty-nine per cent of the respondents had never smoked, 39% had smoked at some time and 22% were regular smokers. Most of the respondents indicated that they had one or more of the following symptoms associated with menstruation: pain, depression, irritability, headaches, cramps. Analysis of the data showed that regular smokers were significantly more likely than those who had never smoked to have all these symptoms. Whilst the percentage of 'sometime smokers' experiencing pain, depression and headaches fell between smokers and 'never-smokers', the percentage experiencing unpleasant symptoms in general, irritability and cramps was the same as for regular smokers. If causality could be demonstrated, messages about immediate health problems such as these might be more powerful health education to young women than information about long-term risks.</p> |
| <p>CHEUNG, Y.B. (2002) Early origins and adult correlates of psychosomatic distress. Social Science and Medicine, 55(6), 937-948.</p> | <p>Previous studies have demonstrated associations between fetal insults and psychological and developmental outcomes in children and adolescents. It is not clear whether psychosomatic problems in adults also have early origins. This study involved full-term live-born singletons free of congenital anomaly in the 1970 British Birth Cohort Study. Birthweight, gestational age, maternal smoking, parental social class and birth order were recorded around the time of birth. Psychological and somatic distresses were measured by the Malaise Inventory at age 26. A number of socio-behavioural covariates were also measured at this time. Multiple (least square) regression analysis showed that birthweight standardised for gestational age had a "reverse J" relation with psychological distress ($p < 0.05$); gestational age was inversely related to psychological distress (each $p < 0.05$); levels of maternal smoking were positively related to both psychological distress and somatic distress (each $p < 0.01$). Logistic regression analyses of high levels of psychological distress and somatic distress gave similar results. The findings were not strongly affected by adjustment for various adult correlates. In supplementary analyses multiple imputation was used to handle loss to follow-up and missing values at age 26. Approximately, the same patterns of associations were found. The results support the hypothesis of a biological link between perinatal factors and psychological distress in adults. The strengths of the associations were compared with those between the outcome and adult correlates.</p> |

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| <p>CRAWLEY, H.F and WHILE, D. (1995) The diet and body weight of British teenage smokers at 16-17 years. European Journal of Clinical Nutrition, 49, 904-914.</p> | <p>OBJECTIVE:</p> <p>To examine the influence of teenage smoking habits on nutrient intake, food choice and body size.</p> <p>DESIGN:</p> <p>Data was collected cross-sectionally: smoking habits were evaluated by questionnaire; heights and weights were measured and dietary intakes were quantitatively assessed via 4-day unweighed dietary diaries.</p> <p>SUBJECTS:</p> <p>The subjects studied (n = 3430) were participants in the 1970 Longitudinal Birth Cohort, and were nationally distributed throughout Britain.</p> <p>RESULTS:</p> <p>Male and female smokers consumed significantly ($P < 0.005$) more alcohol and less fibre, thiamin and vitamin C than occasional or never smokers. Male smokers also consumed significantly more fat when expressed as a percentage of energy intake, and significantly less non-milk extrinsic sugar ($P < 0.01$) and iron ($P < 0.005$) than occasional or never smokers. Regular and occasional female smokers consumed significantly ($P < 0.005$) less protein and calcium than never smokers, and regular smokers also reported lower intakes of zinc, selenium, riboflavin, carotene and folates ($P < 0.005$) and iodine ($P < 0.01$) than never or occasional smokers. Both male and female smokers were less likely to be consumers of puddings, biscuits and wholemeal bread, but were more likely ($P < 0.005$) to consume alcoholic beverages and coffee. Intakes of chips, alcoholic beverages and coffee were significantly ($P < 0.005$) higher among smokers and intakes of puddings, fruit, fruit juices and breakfast cereals lower. Regular female smokers also consumed significantly ($P < 0.005$) fewer vegetables. Smoking habit did not appear to be related to body size in this cohort.</p> <p>CONCLUSION:</p> <p>The diets of teenage smokers, particularly teenage girls, appear to be significantly different to those of non-smokers, but smoking was not related to body size. Lower intakes of antioxidant nutrients, fruits, vegetables and cereals by teenage smokers are of particular concern.</p> |
| <p>CRAWLEY, H.F and WHILE, D. (1996) Parental smoking and the nutrient intake and food choice of British teenagers aged 16-17 years. Journal of Epidemiology and Community Health, 50(3), 306-312.</p> | <p>STUDY OBJECTIVE: To examine the association between parental smoking habits and the nutrient intake and food choice of teenagers aged 16-17 years, allowing for differences in teenage smoking and the social class and regional distribution of the participants. DESIGN: Data were collected from the 1970 longitudinal birth cohort, cross-sectionally at 16-17 years. The smoking habits of teenagers were evaluated from a questionnaire completed by the subjects themselves, and the smoking habits of parents by interview. The nutrient and food intakes of teenagers were quantitatively assessed using a four day unweighed dietary diary. SETTING: The participants were distributed throughout Britain. PARTICIPANTS: A subsample of 1222 males and 1735 females was isolated from respondents to the 1970 birth cohort 16-17 year data collection sweep undertaken in 1986-87. MAIN RESULTS: Parental smoking habits were associated with different dietary patterns among</p> |

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| | <p>teenagers regardless of whether the teenagers themselves smoked. Dietary differences noted were similar to those observed previously among smokers, with lower intakes of fibre, vitamin C, vitamin E, folates, and magnesium in particular reported among both males and females in households where parents were smokers. These lower intakes were associated with lower intakes of fruit juices, wholemeal bread, and some vegetables. CONCLUSION: Teenagers who lived with parents who smoked had different nutrient and food intakes to those with non-smoking parents, and teenagers exposed to parental smoking appeared to have similar dietary patterns to teenagers who themselves smoked.</p> |
| <p>DE COULON, A, MESCHI, E and YATES, M. (2010) Education, basic skills and health-related outcomes. NRDC Research Report, May 2010. London: NRDC.</p> | <p>This summary is based on a report which analyses the relationship between human capital, measured by highest education levels and basic skills, and three health-related outcomes: drinking, smoking and body weight. We explore the role of formal education, as measured by level of qualification attained, and actual basic skills as assessed by literacy and numeracy tests. Previous research has mainly focused on one of these variables only, failing to individuate the possibly different cumulative and interactive role of education and basic skills in affecting health behaviours.</p> |
| <p>DREGAN, A , BROWN, J and ARMSTRONG, D. (2011) Do adult emotional and behavioural outcomes vary as a function of diverse childhood experiences of the public care system? Psychological Medicine, 41(10), 2213-2220.</p> | <p>Background. Longitudinal data from the 1970 British Cohort Study were used to examine the long-term adult outcomes of those who, as children, were placed in public care.</p> <p>Method. Multivariate logistic estimation models were used to determine whether public care and placement patterns were associated with adult psychosocial outcomes. Seven emotional and behavioural outcomes measured at age 30 years were considered : depression, life dissatisfaction, self-efficacy, alcohol problems, smoking, drug abuse, and criminal convictions.</p> <p>Results. The analyses revealed a significant association between public care status and adult maladjustment on depression [odds ratio (OR) 1.74], life dissatisfaction (OR 1.45), low self-efficacy (OR 1.95), smoking (OR 1.70) and criminal convictions (OR 2.13).</p> <p>Conclusions. Overall, the present study findings suggest that there are enduring influences of a childhood admission to public care on emotional and behavioural adjustment from birth to adulthood. Some of the associations with childhood public care were relatively strong, particularly with respect to depression, self-efficacy and criminal convictions.</p> |
| <p>DREGAN, A and GULLIFORD, M.C. (2012) Foster care, residential care and public care placement patterns are associated with adult life trajectories: population-based cohort study. Social Psychiatry and Psychiatric Epidemiology, 47(9), 1517-1526.</p> | <p>Objectives</p> <p>Childhood experiences of public care may be associated with adult psychosocial outcomes. This study aimed to evaluate the associations of four public care exposures: type of placement, length of placement, age at admission to care and number of placements, as well as the reasons for admission to public care with emotional and behavioural traits at age 30 years.</p> <p>Methods</p> <p>Participants included 10,895 respondents at the age 30 survey of the 1970 British Cohort Study (BCS70) who were not adopted and whose care history was known. Analyses were adjusted for individual, parental and family characteristics in childhood.</p> <p>Results</p> |

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| | <p>Cohort members with a public care experience presented lower childhood family socio-economic status compared with those in the no public care group. After adjusting for confounding, exposure to both foster and residential care, longer placements and multiple placements were associated with more extensive adult emotional and behavioural difficulties. Specifically, residential care was associated with increased risk of adult criminal convictions (OR = 3.09, 95% CI: 2.10–4.55) and depression (1.81, 1.23–2.68). Multiple placements were associated with low self-efficacy in adulthood (OR = 3.57, 95% CI: 2.29, 5.56). Admission to care after the age of 10 was associated with increased adult criminal convictions (OR = 6.03, 95% CI: 3.34–10.90) and smoking (OR = 3.32, 95% CI: 1.97–5.58).</p> <p>Conclusion</p> <p>Adult outcomes of childhood public care reflect differences in children's experience of public care. Older age at admission, multiple care placements and residential care may be associated with worse outcomes.</p> |
| <p>FEINSTEIN, L, BYNNER, J and DUCKWORTH, K. (2006) Young People's Leisure Contexts and their Relation to Adult Outcomes. <i>Journal of Youth Studies</i>, 9(3), 305-327(23).</p> | <p>Leisure activity plays a significant role in identity formation during the teens, both reinforcing previous developmental trends and shaping new ones. The context for leisure activity—youth club, church club, sports club, and so on—is important in signifying the probable social mix and interactions of the young people participating. This paper summarises findings from exploratory research using age-16 data from the 1970 British Birth Cohort Study (BCS70) to investigate the relation of age-16 leisure contexts to later adult outcomes, taking account of the family background and individual characteristics that predict participation in these contexts. Using logistic regression modelling, a range of binary outcome variables indicating experience of social exclusion at age 30 were regressed on variables measuring frequency of participation in different types of leisure activity, holding constant prior family circumstances and developmental characteristics. The analysis demonstrated the attraction of youth clubs, compared with other out-of-school activities, for young people with disadvantaged backgrounds and poor school achievement. Over and above these latter factors, youth club participation, compared with other forms of activity, was associated with increased probability of social exclusion outcomes, up to the age of 30, including lack of qualifications, unemployment, smoking, drinking, and crime. Other settings such as sports clubs and church clubs showed no associations of this kind or associations in the opposite direction. It was concluded that youth clubs are important settings for positive influence and inhibiting social exclusion processes, but more development of the provision in more structured directions is needed.</p> |
| <p>GALE, C, JOHNSON, W, DEARY, I. J, SCHOON, I and BATTY, G. D. (2009) Intelligence in girls and their subsequent smoking behaviour as mothers: the 1958 and 1970 birth cohort studies. <i>International Journal of Epidemiology</i>, 38(1), 173-181.</p> | <p>Background Exposure to tobacco smoke either in utero or postnatally can have substantial adverse effects on child health, yet many women continue to smoke during pregnancy and after the birth. How women's intelligence in childhood affects their smoking behaviour as mothers is unclear.</p> <p>Methods The participants were from two British national birth cohorts: 3325 women aged 33 years from the 1958 National Child Development Study and 1971 women aged 34 years from the 1970 British Cohort Study. We used structural equation modelling to examine the direct and indirect effects of intelligence measured at age 10–11 years, parental and current social class, educational attainment and age at first birth on smoking during pregnancy and current smoking status.</p> <p>Results Forty per cent of women in the 1958 cohort smoked during pregnancy, compared with 28% of those from the 1970 cohort. In both cohorts, women with lower IQ in childhood were more likely as adults to smoke during pregnancy and to be a</p> |

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| | <p>smoker currently. Structural equation modelling showed that the effects of childhood IQ on smoking behaviour were indirect, as they were statistically mediated by educational attainment and age at first birth. There was some effect of educational attainment and age at first birth on smoking behaviour over and above the effect of intelligence.</p> <p>Conclusion Childhood intelligence influenced women's smoking behaviour as mothers primarily through its contributions to educational attainment and age at first birth.</p> |
| <p>GALE, C. R, BATTY, G. D and DEARY, I. J. (2008) Locus of Control at Age 10 Years and Health Outcomes and Behaviors at Age 30 Years: The 1970 British Cohort Study. <i>Psychosomatic Medicine</i>, 70(4), 397-403.</p> | <p>Objective: To examine the relationship between locus of control at age 10 years and self-reported health outcomes (overweight, obesity, psychological distress, health, and hypertension) and health behaviors (smoking and physical activity) at age 30, controlling for sex, childhood IQ, educational attainment, earnings, and socioeconomic position.</p> <p>Methods: Participants were members of the 1970 British Cohort Study, a national birth cohort. At age 10, 11,563 children took tests to measure locus of control and IQ. At age 30, 7551 men and women (65%) were interviewed about their health and completed a questionnaire about psychiatric morbidity.</p> <p>Results: Men and women with a more internal locus of control score in childhood had a reduced risk of obesity (odds ratio, 95% CI, for a SD increase in locus of control, 0.86, 0.78–0.95), overweight (0.87, 0.82–0.93), fair or poor self-rated health (0.89, 0.81–0.97), and psychological distress (0.86, 0.76–0.95). Women with a more internal locus of control had a reduced risk of high blood pressure (0.84, 0.76–0.92). Associations between childhood IQ and risk of obesity and overweight were weakened by adjustment for internal locus of control.</p> <p>Conclusion: Having a stronger sense of control over one's own life in childhood seems to be a protective factor for some aspects of health in adult life. Sense of control provides predictive power beyond contemporaneously assessed IQ and may partially mediate the association between higher IQ in childhood and later risk of obesity and overweight.</p> |
| <p>GREENWOOD, R, GOLDING, J, ROSS, E and VERITY, C. (1998) Prenatal and perinatal antecedents of febrile convulsions and afebrile seizures: data from a national cohort study. <i>Paediatric & Perinatal Epidemiology</i>, 12(S1), 76-95.</p> | <p>The assumption is often made that brain damage during the perinatal period is likely to result in neurological abnormalities such as epilepsy and cerebral palsy. However, there has been accumulating evidence that cerebral palsy is rarely, if ever, a result of intrapartum events, but few studies of other neurological abnormalities have been undertaken. We analysed data on 16,163 children from the 1970 British national cohort study and followed to age 10, focusing on the 378 who developed febrile convulsions (FCs) and 63 children with idiopathic afebrile seizures (IAS). Children with IAS were significantly more likely not to have been breast fed ($P < 0.001$), and this was independent of features such as birthweight and maternal disorder. A similar finding was apparent for FCs ($P < 0.05$). Although children with low birthweight were at increased risk of both conditions, there was no association with maternal smoking in pregnancy. No associations were found between indications of fetal distress during labour and later febrile convulsions or afebrile seizures. There was no evidence that intervention during labour would have improved these outcomes. However, associations were found with abnormalities earlier in pregnancy, suggesting a prenatal rather than an intrapartum aetiology.</p> |

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| <p>MAUGHAN, B, TAYLOR, C, TAYLOR, A, BUTLER, N.R and BYNNER, J. (2001) Pregnancy smoking and childhood conduct problems: a causal association? <i>Journal of Child Psychology and Psychiatry</i>, 42(8), 1021-1028.</p> | <p>Recent investigations have highlighted associations between maternal smoking in pregnancy and antisocial behaviour in offspring, and suggested the possibility of a causal effect. We used data from the 1970 British birth cohort study (BCS70) to examine these links in a large, population-based sample studied prospectively from birth to age 16. We found a strong dose-response relationship between the extent of pregnancy smoking and childhood-onset conduct problems, but no links with adolescent-onset antisocial behaviours. Effects on childhood-onset conduct problems were as marked for girls as for boys, and were robust to controls for a variety of social background factors and maternal characteristics. Controls for mothers' subsequent smoking history modified this picture, however, suggesting that the prime risks for early-onset conduct problems may be associated with persistent maternal smoking--or correlates of persistent smoking--rather than with pregnancy smoking per se.</p> |
| <p>MONTGOMERY, S.M, EHLIN, A and EKBOM, A. (2005) Smoking during pregnancy and bulimia nervosa in offspring. <i>Journal of Perinatal Medicine</i>, 33(3), 206-211.</p> | <p>Because smoking during pregnancy is implicated in influencing appetite and impulse control in offspring, the aim of this study was to establish if it is associated with bulimia nervosa in offspring. Bulimia was identified at age 30 years among 4046 females, born 5-11 April, 1970. After adjustment for potential confounding factors including body mass index (BMI) and maternal psychiatric morbidity, smoking during pregnancy was associated with bulimia in offspring by age 30 years. Compared with non-smoking mothers, the adjusted odds ratios (95% confidence intervals) for bulimia in offspring were 0.74 (0.25-2.21) for those who gave up before pregnancy, 3.04 (1.16-7.95) for giving up during pregnancy and 2.64 (1.47-4.74) for smoking throughout pregnancy. Smoking during pregnancy was not associated with anorexia nervosa in offspring. Neither BMI nor variation between childhood and adult BMI explain the association. If the association of smoking during pregnancy with bulimia in offspring is causal, then it may operate through compromised central nervous system development and its influence on impulse or appetite control. The increased risk associated with mothers who gave up smoking during pregnancy emphasizes the importance of smoking cessation prior to conception.</p> |

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| <p>MURRAY, J, IRVING, B, FARRINGTON, D.P, COLMAN, I and BLOXSOM, C.A.J. (2010) Very early predictors of conduct problems and crime: results from a national cohort study. <i>Journal of Child Psychology and Psychiatry and Allied Disciplines</i>, 51(11), 1198-1207.</p> | <p>Keywords:</p> <p>Antisocial behaviour; conduct problems; crime; prediction; birth cohort; longitudinal study</p> <p>Background: Longitudinal research has produced a wealth of knowledge about individual, family, and social predictors of crime. However, nearly all studies have started after children are age 5, and little is known about earlier risk factors.</p> <p>Methods: The 1970 British Cohort Study is a prospective population survey of more than 16,000 children born in 1970. Pregnancy, birth, child, parent, and socioeconomic characteristics were measured from medical records, parent interviews, and child assessments at birth and age 5. Conduct problems were reported by parents at age 10, and criminal convictions were self-reported by study members at ages 30–34.</p> <p>Results: Early (up to age 5) psychosocial risk factors were strong predictors of conduct problems and criminal conviction. Among pregnancy and birth measures, only prenatal maternal smoking was strongly predictive. Risk factors were similar for girls and boys. Additive risk scores predicted antisocial behaviour quite strongly.</p> <p>Conclusions: Risk factors from pregnancy to age 5 are quite strong predictors of conduct problems and crime. New risk assessment tools could be developed to identify young children at high risk for later antisocial behaviour.</p> |
| <p>NEUSPIEL, D.R, RUSH, D, BUTLER, N.R, GOLDING, J, BIJUR, P.E and KURZON, M. (1989) Parental smoking and post-infancy wheezing in children: a prospective cohort study. <i>American Journal of Public Health</i>, 79, 1-4.</p> | <p>The contribution of parental smoking to wheezing in children was studied in a subset of all British births between April 5 and 11, 1970 (N = 9,670). Children of smoking mothers had an 18.0 per cent cumulative incidence of post-infancy wheezing through 10 years of age, compared with 16.2 per cent among children of nonsmoking mothers (risk ratio 1.11, 95% CI: 1.02, 1.21). This difference was confined to wheezing attributed to wheezy bronchitis, of which children of smokers had 7.4 per cent, and those of nonsmokers had 5.2 per cent (risk ratio 1.44, 95% CI: 1.24, 1.68). The incidence of wheezy bronchitis increased as mothers smoked more cigarettes. After multiple logistic regression analysis was used to control for paternal smoking, social status, sex, family allergy, crowding, breast-feeding, gas cooking and heating, and bedroom dampness, the association of maternal smoking with childhood wheezy bronchitis persisted. Some of this effect was explained by maternal respiratory symptoms and maternal depression, but not by neonatal problems, the child's allergic symptoms, or paternal respiratory symptoms. There was a 14 per cent increase in childhood wheezy bronchitis when mothers smoked over four cigarettes per day, and a 49 per cent increase when mothers smoked over 14 cigarettes daily.</p> |

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| <p>ROBERTS, K, MUNAFÒ, M, RODRIGUEZ, D, DRURY, M, MURPHY, M, NEALE, R and NETTLE, D. (2005) Longitudinal analysis of the effect of prenatal nicotine exposure on subsequent smoking behavior of offspring. <i>Nicotine & Tobacco Research</i>, 7(5), 801-808.</p> | <p>We explored the influence of maternal smoking during pregnancy on the likelihood of smoking among offspring in adolescence and adulthood using data from two similar British birth cohort surveys, the 1958 National Child Development Study and the 1970 British Birth Survey. Similar information was available in each cohort on maternal age at delivery, offspring sex, maternal smoking during pregnancy, parental and offspring socioeconomic status, and parental smoking at the time offspring smoking was assessed at age 16 years. Offspring smoking at 16 years and at 30/33 years were the primary outcomes of interest. Our data support an association between maternal smoking during pregnancy and an increased risk of offspring smoking later in life among female offspring but not among male offspring. Female offspring of mothers who smoked during pregnancy were more likely to smoke at 16 years than were their male counterparts. Moreover, in this same subgroup, female offspring smoking at 16 years was associated with an increased likelihood of smoking at 30/33 years. Further investigation in larger studies with greater detail of factors shaping smoking in childhood and adulthood and biochemically verified outcome measures would be desirable to clarify the relationship.</p> |
| <p>RUSH, D and CASSANO, P. (1983) Relationship of cigarette smoking and social class to birthweight and perinatal mortality among all births in Britain, 5-11 April 1970. <i>Journal of Epidemiology and Community Health</i>, 37, 249-255.</p> | <p>The joint associations of maternal cigarette smoking and social class on perinatal outcome were studied in the 1970 British birth cohort (British Births). Whereas smoking was much more frequent among women in social classes III, IV, and V, there was little difference in the birthweight decrement associated with smoking across class. Perinatal mortality, however, was increased only among smokers in the manual social classes. Thus whereas the offspring of more privileged smokers were not protected from intrauterine growth retardation, they did not suffer from increased perinatal mortality. Observations of other populations suggest a possible nutritional mediation of this protective effect.</p> |
| <p>TAYLOR, B and WADSWORTH, J. (1987) Maternal smoking during pregnancy and lower respiratory tract illness in early life. <i>Archives of Disease in Childhood</i>, 62(8), 786-791.</p> | <p>SUMMARY In a national study of 12 743 children maternal, but not paternal, smoking was confirmed as having a significant influence on the reported incidence of bronchitis and admission to hospital for lower respiratory tract illness during the first five years of life. Reported rates of admissions to hospital for lower respiratory tract diseases were found to be as high in children born to mothers who stopped smoking during pregnancy as in those whose mothers smoked continuously both during and after pregnancy. Rates of admissions to hospital for lower respiratory tract diseases in children whose mothers started smoking only postnatally were no higher than in those whose mothers remained non-smokers. Postnatal smoking seemed to exert a significant influence on the reported incidence of bronchitis, but less than smoking during pregnancy. These findings suggest that maternal smoking influences the incidence of respiratory illnesses in children mainly through a congenital effect, and only to a lesser extent through passive exposure after birth.</p> |

VACCINATION

GOLDING, J, HOWLETT, B.C and BUTLER, N.R. (1981) Immunisation Reactions and Long-Term Follow-up. Report to the Department of Health and Social Security. Bristol: Department of Child Health, University of Bristol.

Unavailable.

SILFVERDAL, S.A, EHLIN, A and MONTGOMERY, S.M. (2007) Protection against clinical pertussis induced by whole-cell pertussis vaccination is related to primo-immunisation intervals. *Vaccine*, 25, 7510-7515.

Aims: Information on subjects who had at least three immunisations against pertussis was provided by longitudinal data from the 1970 British Cohort Study (BCS70) and used to assess whether three whole-cell pertussis (wP) immunisations given within less than 5 months confer less effective protection in childhood compared with a schedule with a longer interval.

Methods: Age at pertussis infection was the dependent variable in a Cox regression analysis, to investigate associations with duration between first and third pertussis immunisation; with third immunisation modelled as a time-dependent covariate. Adjustment was for number of pertussis immunisations (three or four), sex, social class and other potential confounding factors.

Results: A total of 8545 children were included in the analysis and 556 had a history of whooping cough. A duration of over 4 months between first and third pertussis immunisations is statistically significantly associated with a reduced risk of pertussis infection by age 10 years, compared with three immunisations given over a shorter period, producing a statistically significant adjusted hazard ratio of 0.74 (0.62–0.92). A fourth immunisation against pertussis further enhanced the protective effect with a hazard ratio of 0.59 (0.44–0.82).

Conclusion: These results were based on a historical UK cohort using wP vaccine, and indicate that a vaccination schedule with an interval between the immunisations greater than 4 months, and also including a fourth immunisation, would be more effective in this population than a three dose schedule within a shorter interval without booster.

LEWIS, S.A and BRITTON, J.R. (1998) Measles infection, measles vaccination and the effect of birth order in the aetiology of hay fever. *Clinical & Experimental Allergy*, 28(12), 1493-1500.

BACKGROUND:

It has recently been suggested that measles infection may reduce the risk of atopy.

OBJECTIVE:

To study the independent effect of measles infection and measles vaccination on the occurrence of hay fever in a British national birth cohort.

METHODS:

In over 6000 children born in 1970, details of immunizations and childhood diseases were collected by parental interviews at ages 5, 10 and 16 years, and hay fever within the past year at age 16 years.

RESULTS:

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| | <p>In univariate analysis, hay fever was less common in those contracting measles infection than in those not infected (OR 0.86, 95% CI 0.76-0.96), and more common in those given measles vaccination than in those not vaccinated (OR 1.16, 95% CI 1.03-1.31). However, these effects were strongly confounded by birth order, which was closely associated with the likelihood of receiving measles vaccination and with the risk of hay fever. A strong interaction between the effects of measles vaccination and infection, and birth order was found, such that in those with many older sibling contacts, hay fever was significantly and independently reduced in relation to both measles infection and measles vaccination relative to those who were neither infected nor vaccinated.</p> <p>CONCLUSIONS:</p> <p>Both measles infection and measles vaccination in childhood appear to reduce the risk of hay fever in children with multiple older sibling contacts. Differential exposure or response to the measles virus may explain the effect of birth order on the occurrence of allergic disease.</p> |
| <p>MORRIS, D.L, MONTGOMERY, S.M, EBRAHIM, S, POUNDER, R.E and WAKEFIELD, A.J. (1997) Measles vaccination and inflammatory bowel disease in the 1970 British cohort study. . Gut, 41(SUPPLEMENT 3), A37.</p> | <p>Unavailable</p> |
| <p>MORRIS, D.L, MONTGOMERY, S.M, THOMPSON, N.P, EBRAHIM, S, POUNDER, R.E and WAKEFIELD, A.J. (2000) Measles vaccination and inflammatory bowel disease: a national British cohort study. The American Journal of Gastroenterology, 95(12), 3507-3512. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2886488/</p> | <p>OBJECTIVE:</p> <p>Measles vaccination has been suggested as a risk for inflammatory bowel disease. Atypical age of measles infection has also been associated with Crohn's disease. This study was designed to examine the relationship of measles vaccination and age of measles vaccination with later inflammatory bowel disease.</p> <p>METHODS:</p> <p>A prospective population-based national birth cohort was used, of those born in 1 wk in April 1970 in Great Britain. The data are from 7616 responding members of the 1970 British Cohort Study with complete vaccination data, who were traced at age 26 yr. A diagnosis of Crohn's disease, ulcerative colitis, and diabetes mellitus (a control disease) was obtained by survey at age 26 yr, and confirmed by physicians. Vaccination data were from survey at age 5 yr. Measles and mumps infection data were obtained from the survey at age 10 yr. Adjustment was made for sex, household crowding in childhood, and father's social class at birth.</p> <p>RESULTS:</p> <p>No statistically significant association was found between measles vaccination status at 5 yr and Crohn's disease (adjusted odds ratio [OR] 0.67, 95% confidence interval [CI] 0.27-1.63), ulcerative colitis (adjusted OR 0.57, 95% CI 0.20-1.61), or diabetes (adjusted OR 0.75, 95% CI 0.33-1.74). There was a statistically significant trend ($p = 0.040$) with increasing age of measles vaccination for risk of Crohn's disease, although this was based on very few cases vaccinated after age 2 yr.</p> <p>CONCLUSIONS:</p> <p>In this cohort, monovalent measles vaccination status is not associated with inflammatory bowel disease by age 26 yr. Older age at measles vaccination needs to be examined in other studies to confirm whether it is a genuine risk for Crohn's disease</p> |

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| <p>POLLOCK, J.I and GOLDING, J. (1993) Social epidemiology of chickenpox in two British national cohorts. <i>Journal of Epidemiology & Community Health</i>, 47(4), 274-281.</p> | <p>STUDY OBJECTIVE--To provide a quantitative description of factors independently predictive of reported chickenpox infections in two national cohorts of British children. DESIGN--Longitudinal cohort study design employing logistic regression analysis of data obtained in the 1970 British Births Survey (later to become the Child Health and Education Study, CHES), and the 1958 British Perinatal Mortality Survey (later to become the National Child Development Survey, NCDS).</p> <p>SETTINGS--One-week birth cohorts covering the whole of the United Kingdom. PARTICIPANTS--Data were obtained from questionnaires administered to the carers of 10,196 children born in the UK between 5 and 11 April 1970 (CHES) and 10,927 children born in the UK between 3 and 9 March 1958 (NCDS). These numbers consist of the whole of the surviving cohorts excluding those for whom data were incomplete.</p> <p>MEASUREMENTS--Biological, social, and medical factors in the parents and children, as recorded by the child's principle carer or from clinical notes.</p> <p>MAIN RESULTS--Chickenpox by the age of 10 years was reported to be more common in the children of advantaged families (higher social class, higher parental education levels), with a higher prevalence in those parts of the United Kingdom normally associated with affluence, such as the South East and South West of England, and lower rates in Wales and Scotland. Chickenpox by 10 years was also associated with more crowding in the home. A similar but less marked pattern occurred for chickenpox by the age of 11 years in the 1958 NCDS cohort. This social distribution apparently reflected overall rather than age-specific susceptibility.</p> <p>CONCLUSIONS--The national and international pattern of chickenpox epidemiology indicate that both social and climatological factors may be important in defining groups at risk. Further research is indicated if a vaccination service is to be implemented in this country.</p> |
| SIGHT | |
| <p>RUDNICKA, A, OWEN, C. G, RICHARDS, M, WADSWORTH, M. E and STRACHAN, D. P. (2008) Effect of breastfeeding and sociodemographic factors on visual outcome in childhood and adolescence. <i>American Journal of Clinical Nutrition</i>, 87(5), 1392-1399</p> | <p>Background: It has been suggested that early life factors, including breastfeeding and birth weight, program childhood myopia. Objective: We examined the relation of reduced unaided vision (indicative of myopia) in childhood and adolescence with infant feeding, parental education, maternal age at birth, birth weight, sex, birth order, and socioeconomic status. Design: Three British cohorts recruited infants born in 1946 (n = 5362), 1958 (n = 18 558), and 1970 (n = 16 567). Adjusted odds ratios (ORs) for unaided vision of 6/12 or worse at ages 10–11 and 15–16 y from each cohort were pooled by using fixed-effects meta-analyses. Results: The prevalence of reduced vision ranged from 4.4% to 6.5% at 10–11 y and from 9.4% to 11.4% at 16 y, with marginally higher levels in later cohorts. Breastfeeding declined across successive cohorts (65%, 43%, and 22% in those breastfed for >1 mo, respectively). Pooled ORs showed no associations between infant feeding and vision after adjustment at either age. Parental education (OR: 1.48, high versus low education; 95% CI: 1.23, 1.79), maternal age (OR: 1.10, per 5-y increase; 95% CI: 1.04, 1.17), birth weight (OR: 0.85, per 1-kg rise; 95% CI: 0.76, 0.95), number of older siblings (OR: 0.89, per older sibling; 95% CI: 0.83, 0.94), and sex (OR: 1.10, girls versus boys; 95% CI: 0.98, 1.23) were related to adverse visual outcome in childhood. Stronger associations were observed in adolescence, except that the association with birth weight was null. Conclusions: Infant feeding does not appear to influence visual development. Consistent associations of reduced vision with parental education, sex, maternal age, and birth order suggest that other environmental factors are important for visual development and myopia in early life.</p> |

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| <p>STEWART-BROWN, S. (1985) Spectacle prescribing among 10-year-old children. British Journal of Ophthalmology, 69(12), 874-880.</p> | <p>Between 10 and 12% of the 10-year-old children in the 1970 national birth cohort were prescribed a pair of spectacles. One-fifth of these children had no impairment of visual acuity and a further 15-20% had only minimal visual defects. Only two-thirds of children with spectacles could produce them when asked to do so at the survey school medical examination; this was particularly common among those in the lower social classes and among children who had no detectable impairment. The information presented in this paper combined with that from earlier national birth cohort studies suggests that overprescribing of spectacles to school children is very common. The financial implications of this overprescribing are discussed.</p> |
| <p>STEWART-BROWN, S and BREWER, R. (1985) The Significance of minor defects of visual acuity in school children: Implications for screening and treatment. Trans Ophthalmology Society (UK), 150, 287-295.</p> | <p>Information collected on the children of the 1970 Birth Cohort Study has been used to examine the educational performance of children who have minor defects of visual acuity. Results suggest that children with mild degrees of hypermetropia may experience difficulty learning to read but with exclusion of this group significant educational disability was not associated with minor visual defects. The significance of this finding is discussed in conjunction with information on prevalence of defects and current practice in screening and treating visual defects in school children. Some anomalies in current practice are identified.</p> |
| <p>STEWART-BROWN, S.L and HASLUM, M. (1988) Partial sight and blindness in children of the 1970 birth cohort at 10 years of age. Journal of Epidemiology and Community Health, 42, 17-23.</p> | <p>The prevalence and causes of partial sight and blindness (best corrected distant visual acuity of 6/24 or less) have been studied in a nationally representative sample of 15,000 10-year-old children. The prevalence of blindness (acuity less than 6/60) was between 3.4 and 4.0/10,000. All these children had been registered as blind; less than half were in schools for the blind, the remainder were all in other special schools. The prevalence of partial sight (acuity less than or equal to 6/24 greater than or equal to 6/60) was between 5.4 and 8.7/10,000; less than half of these children were in schools for the visually handicapped or partially sighted; most were in ordinary schools; half were neither registered as partially sighted nor ascertained as in need of special education for visual handicap. The most common cause of partial sight or blindness in this cohort was congenital cataract; the second most common was congenital nystagmus. The study identified a number of children whose best acuity on examination was 6/24 or less who had either no ophthalmological diagnosis or who had been diagnosed as suffering from a refractive error. These children have been included in the study because at the time of the survey they had either not been prescribed spectacles or they had spectacles which they were not wearing; the functional visual level of these children was therefore equivalent to that of those defined as partially sighted.</p> |
| <p>STEWART-BROWN, S.L, HASLUM, M.N and BUTLER, N.R. (1985) Educational attainment of 10-year-old children with treated and untreated visual defects. Developmental Medicine and Child Neurology, 27(4), 504-513.</p> | <p>Children with visual defects who took part in a 10-year survey were compared with their peers on measures of intelligence, reading, mathematics and sporting ability. Results are consistent with earlier findings of increased intelligence among children with myopia and slightly reduced intelligence among children with amblyopia. Those with other visual defects had normal intelligence scores. Once intelligence had been taken into account, only children with mild hypermetropia were under-achieving at reading. Those with severe myopia were reading better than expected. None of the children could be shown to be over- or under-achieving at maths, any variation being due to intelligence. The mothers of children with visual defects perceived them to be less able at sport. Comparison of the performances of children with minor visual defects who had and had not been prescribed spectacles did not suggest any disadvantage for those without spectacles, with the possible exception of children with mild hypermetropia. It is concluded that the majority of visual defects do not affect children's learning, and that current indications for prescribing spectacles need to be validated.</p> |

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| <p>STEWART-BROWN,S and BUTLER,N.R. (1985) Visual acuity in a national sample of 10-year-old children. Journal of Epidemiology and Community Health, 39, 107-112.</p> | <p>The prevalence of defects of visual acuity among the 10 year old children in the 1970 birth cohort was 22.1%, but only in one third of these children was the defect more severe than 6/9. Defects were more common among girls. The relation of defects to social class was complex. Comparison with data collected on the children of the 1958 cohort when they were 11 years old suggests that although the prevalence of 6/9 visual acuity has remained constant over the last decade, the prevalence of more severe defects has declined from 12.9% to 7.3%. These findings have a number of implications for the provision of screening programmes and of ophthalmic services for children.</p> |
| <h2>HEARING / EAR DISEASE</h2> | |
| <p>BENNETT, K.E and HAGGARD, M.P. (1998) Accumulation of factors influencing children's middle ear disease: risk factor modelling on a large population cohort. Journal Of Epidemiology & Community Health, 52(12), 786-793.</p> | <p>STUDY OBJECTIVES: Data were analysed from a large national birth cohort to examine cumulative and interactive prediction from various risk factors for childhood middle ear disease, and to resolve conflicting evidence arising from small and incompletely controlled studies. The large sample size permitted appropriate covariate adjustment to give generality, and permit demographic breakdown of the risk factors. SETTING: A large multi-purpose longitudinal birth cohort study of all births in the UK in one week in 1970, with multiple questionnaire sweeps. PARTICIPANTS: Over 13,000 children were entered into the original cohort. Data on over 12,000 children were available at the five year follow up. MAIN OUTCOME MEASURES: For children at 5 years, parent reported data were available on health and social factors including data on two markers for middle ear disease: the occurrence of purulent (nonwax) ear discharge and suspected or confirmed hearing difficulty. MAIN RESULTS: In those children who had ever had reported hearing difficulty (suspected or confirmed), after control for socioeconomic status, three of the classic factors (male sex, mother's smoking habits since birth, and attending day care) were significantly more frequent. In those who had ever had ear discharge reported, only mother's smoking habit since birth was significantly more frequent. However, it showed an orderly dose response relation. In addition, a derived general child health score was found to be significantly associated with both the middle ear disease markers. Control for this variable in the analysis of those having reported hearing difficulty reduced the effect size of mother's smoking habit, but it remained statistically significant. For reported ear discharge, even after control for the general health score and social index, mother's smoking habits and day care attendance were both significant predictors. Mother's (but not father's) smoking habits and day care attendance were found to be significant risk factors for middle ear disease. Breast feeding effects were weak and did not generally survive statistical control. CONCLUSIONS: A child having all three risk factors (attends day care, a mother who smokes, and male sex) is 3.4 times more likely to have problems with hearing than a child who has none, based on cumulative risk. Further studies should focus on preventative risk modification and well specified intervention.</p> |
| <p>BENNETT, K.E and HAGGARD, M.P. (1999) Behaviour and cognitive outcomes from middle ear disease. Archives of Disease in Childhood, 80(1), 28-35.</p> | <p>OBJECTIVES To resolve controversies over associations between a history of middle ear disease and psychosocial or cognitive/educational outcomes DESIGN Multipurpose longitudinal birth cohort study. Original cohort comprised all UK births between 5 and 11 April 1970; data were available for approximately 12 000 children at 5 years old and 9000 children at 10 years old. METHODS For 5 year old children, parent reported data were available on health, social, and behavioural factors, including data on two validated markers of middle ear disease. Cognitive tests were administered at 5 and 10 years of age, and behavioural problems rated at 10 years by the child's teacher. RESULTS After adjustment for social background and maternal malaise, the developmental sequelae of middle ear disease</p> |

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| | <p>remained significant even at 10 years. The largest effects were observed in behaviour problems and language test data at age 5, but effect sizes were modest overall.</p> <p>IMPLICATIONS These results provide an epidemiological basis for policies that aim to minimise the sequelae of middle ear disease by awareness in parents and preschool teachers, early referral, and intervention for more serious or persistent cases.</p> |
| <p>MONTGOMERY, S.M, OSIKA, W, BRUS, O and BARTLEY, M. (2010) Sex differences in childhood hearing impairment and adult obesity. <i>Longitudinal and Life Course Studies</i>, 1(4), 359-370.</p> | <p>Some adult neurological complications of obesity may have early-life origins. Here, we examine associations of childhood hearing impairment with childhood and adult obesity, among 3288 male and 3527 female members of a longitudinal cohort born in Great Britain in 1970. Height and weight were measured at age 10 years and self-reported at 34 years. Audiometry was conducted at age 10 years. The dependent variable in logistic regression was minor bilateral hearing impairment as a marker of systemic effects, while BMI at age 10 or 34 years were modelled as independent variables with adjustment for potential confounding factors including social class, maternal education and pubertal development at age 10 years. Among females, the adjusted odds ratios (and 95% confidence intervals) for hearing impairment at age 10 years were 2.33 (1.36-3.98) for overweight/obesity; and at age 34 years they were 1.71 (1.00-2.92) for overweight and 2.73 (1.58-4.71) for obesity and the associations were not explained by Childhood BMI at age 10 years. There were no consistent associations among males and interaction testing revealed statistically significant effect modification by sex. The dose-dependent associations among females are consistent with childhood origins for some obesity-associated impaired neurological function and the possible existence of a 'pre-obese syndrome'. The accumulation of risks for poorer health among those who become obese in later life begins in childhood. Childhood exposures associated with bilateral hearing impairment are risks for obesity in later life among females.</p> |
| CANCER | |
| <p>GOLDING, J and GREENWOOD, R. (1995) Intramuscular vitamin K and childhood cancer: two British studies. In SUTOR, A.H and HATHAWAY, W.E (ed), <i>Vitamin K in Infancy</i>. Stuttgart; New York: Schattauer.</p> | <p>We have undertaken two epidemiological studies in Britain which showed a strong association between intramuscular vitamin K and the development of childhood cancer. The first such study was a prospective cohort study following over 16,000 children (born in April 1970) until the age of 10. Vitamin K (Konakion), which was given in the UK intramuscularly in 1970, was strongly associated with the later development of childhood cancer (odds ratio 2.6; 95% confidence interval (CI) 1.3 to 5.2, $p < 0.01$), even when all other factors shown to be associated with childhood cancer had been taken into account. This unexpected result raised the hypothesis that intramuscular (i.m.) vitamin K was causally related to childhood cancer.</p> |
| <p>GOLDING, J, PATERSON, M and KINLEN, L.J. (1990) Factors associated with childhood cancer in a national cohort study. <i>British Journal of Cancer</i>, 62, 304-308.</p> | <p>Information on 16,193 infants delivered in Great Britain in one week of April, 1970 was collected by midwives at the birth and during the first 7 days of life. Using multiple sources, 33 children developing cancer by 1980 were identified from this cohort, giving an incidence of 2.04 per 1,000 total births by the age of 10. Comparisons of these 33 children were made with 99 controls, three for each index case, matched on maternal age, parity and social class. Statistically significant associations were initially found with maternal X-rays and smoking during pregnancy, and the use of analgesics such as pethidine during labour, confirming the findings of retrospective case-control studies. Unexpected statistically significant associations were found with delivery of the child outside term, and drug administration in the first week of life. The latter was found in the absence of an association with neonatal abnormalities in the child and relates mostly to the administration of prophylactic drugs such as vitamin K. Logistic regression involving the whole cohort showed independent statistical associations with maternal smoking (OR 2.5), and drugs to the infant (OR 2.6). After adjusting for these factors no other statistically significant associations were found.</p> |

ACCIDENTS-INJURIES

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| <p>BATTY, G. D, DEARY, I. J, SCHOON, I and GALE, C. R. (2007) Childhood mental ability in relation to cause-specific accidents in adulthood: the 1970 British Cohort Study. QJM, 100(7), 405-414.</p> | <p>Few data link childhood mental ability (IQ) with risk of accidents, and most published studies have methodological limitations.</p> <p>Aim: To examine the relationship between scores from a battery of mental ability tests taken in childhood, and self-reported accidents between the ages of 16 and 30 years.</p> <p>Methods: In the British Cohort study, a sample of 8172 cohort members born in Great Britain in 1970 had complete data for IQ score assessed at 10 years of age and accident data self-reported at age 30 years.</p> <p>Results: The relationship between childhood IQ score and later risk of accident was complex, differing according to sex and the type of accident under consideration. Women with higher childhood IQ were more likely than those with lower scores to report having had an accident(s) while at work, in a vehicle, engaging in sports, and in unspecified circumstances. Adjustment for markers of socioeconomic position weakened or eliminated some of these relations, but higher childhood IQ remained associated with increased risk of sporting and unspecified accidents. Men with higher childhood IQ scores were less likely than those with lower scores to report accidents at work, but more likely to report accidents at home, playing sports or in unspecified circumstances. After adjustment for socioeconomic circumstances, higher childhood IQ in men remained associated with an increased risk of accidents at home or in unspecified circumstances.</p> <p>Discussion: The relationship between childhood mental ability and accidents in adulthood is complex. As in other studies, socioeconomic position has an inconsistent relationship with non-fatal accident type.</p> |
| <p>BIJUR, P.E. (1984) The Relationship Between Child Behaviour and Accidents from Birth to Five: A Multivariate Analysis of a National Cohort. PhD.Columbia University.</p> | <p>Unavailable (PhD thesis).</p> |
| <p>BIJUR, P, GOLDING, J, HASLUM, M and KURZON, M. (1988a) Behavioural predictors of injury in school-age children. American Journal of Diseases of Children, 142, 1307-1312.</p> | <p>The behavior of 10,394 British children was related prospectively to their injury history between ages 5 and 10 years, obtained from parents. Aggressive and overactive behaviors at age 5 years were measured by subscales of the Rutter Child Behavior Questionnaire completed by the parents. Multivariate techniques were used to assess the association between behavior and injuries while controlling for social, demographic, and psychological characteristics. Boys' behavior at age 5 years was more strongly predictive of injuries in the subsequent five years than was girls' behavior. The odds of experiencing injuries resulting in hospitalization in boys with high aggression scores was 2.4 times that of boys with low aggression scores. The identification of high-risk children provides the foundation for understanding the behavioral mechanisms that contribute to injuries and for developing preventive strategies tailored to the needs of these children.</p> |

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| <p>BIJUR, P.E, GOLDING, J and HASLUM, M. (1988b) Persistence of occurrence of injury: Can injuries of pre-schoolers predict injuries of school age children? <i>Pediatrics</i>, 82(5), 707-712.</p> | <p>Data regarding 10,394 children from the 1970 British birth cohort were used to assess the consistency of injuries reported by parents as occurring between birth and 5 years of age and injuries reported between 5 and 10 years of age. Children with three or more separate injury events reported between birth and 5 years of age were 5.9 times more likely to have three or more injuries reported between 5 and 10 years of age than children without early injuries (95% confidence interval = 4.4 to 8.0). Children with one or more injuries resulting in hospitalization before 5 years of age were 2.5 times as likely to have one or more admissions to the hospital for injuries after 5 years of age than children with no early hospitalizations for injuries (95% confidence interval = 2.0 to 3.3). Stepwise regression was used to identify other predictors of injury. The number of injuries before 5 years of age were the best predictors of injuries reported between 5 and 10 years of age, followed by male sex, aggressive child behavior, young maternal age, many older, and few younger siblings. The findings of this study are consistent with two other large studies that relied on medical records rather than parental report and that focused on more severe injuries. Children with several of the identified risk factors can be predicted to have high rates of accidental injuries and may benefit from focused intervention.</p> |
| <p>BIJUR, P.E, GOLDING, J and KURZON, M. (1988c) Childhood accidents, family size and birth order. <i>Social Science and Medicine</i>, 26(8), 839-843.</p> | <p>The relationship between accidents and number of children in the household was assessed in 10,394 children surveyed at ages 5 and 10 years. The analyses suggest that living in a household with 3 or more children during the preschool period increases a child's risk of experiencing accidents that result in hospitalization; and that living in a household with 4 or more children increases the risk of such accidents to school-age children. The number of older rather than younger children had the greatest impact on accident risk. The observed odds ratios suggest that children with 4 or more siblings have 80% to 90% more injuries resulting in hospitalization than only children. The proportions of children with one or more accidents (regardless of the place of treatment) and with repeat accidents were unrelated to family size. Environmental differences between families of varying size accounted for the association with hospitalized accidents.</p> |
| <p>BIJUR, P.E, HASLUM, M and GOLDING, J. (1990) Cognitive and Behavioural Sequelae of Mild Head Injury in Children. <i>Pediatrics</i>, 86(3), 337-344.</p> | <p>Data from a longitudinal study of 13 000 British children were used to assess the sequelae of mild head injury 1 to 5 years after injury. One hundred fourteen children with parental reports of mild head injury treated with ambulatory care or admission to hospital for one night were compared with 601 children with limb fractures, 605 with lacerations, 136 with burns, and 1726 children without injury. Scores at age 10 were adjusted for intelligence, aggressive and hyperactive behavior at age 5, sex, socioeconomic status, and six other social factors. Children with head injuries were statistically indistinguishable from uninjured children on all outcomes except teacher's report of hyperactivity. After control of hyperactivity at age 5 and the social and personal factors, the head-injured children's mean hyperactivity score was four tenths of a standard deviation above that of the uninjured children. Children with lacerations and burns scored as badly or worse on measures of intelligence, mathematics, reading, and aggression as the children with head injuries. The small magnitude of the hyperactivity association coupled with the overall negative results suggests that mild head injury in school-aged children does not have an adverse effect on global measures of cognition, achievement, and behavior 1 to 5 years after injury.</p> |

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| <p>BIJUR, P.E, STEWART-BROWN, S.L and BUTLER, N.R. (1986) Child behaviour and accidental injury in 11, 966 pre-school children. American Journal of Diseases of Children, 140, 487-92.</p> | <p>Social and behavioral characteristics of 11,966 British children, aged 5 years, and mothers' reports of accidental injuries between birth and age 5 years were analyzed. Aggressive behavior was associated with all accidental injuries after controlling psychosocial variables including social class; crowding; mother's psychological distress, age, and marital status; and child's sex. Overactivity was associated only with injuries not resulting in hospitalization after control of the covariates. The relative risk of injuries resulting in hospitalization was 1.9 among children with both high activity and high aggression scores compared with children with low scores on both behavioral scales. The findings support the inference that aggression and overactivity are independently associated with accidents. The associations between child behavior and injuries were stronger than the associations between injuries and the social factors including social class and crowding. This finding suggests that interventions aimed at high-risk groups may be effective supplements to environmental interventions.</p> |
| <p>GOLDING, J. (1983) Accidents in the under five's. Health Visitor, 56, 293-4.</p> | <p>Accidents are one of the major causes of death in the preschool child, and statistics from the National Cohort Study emphasize this fact. The author describes some of these accidents and notes that 65 per cent of the children had parents who were from social classes IV and V or who were not married to each other.</p> <p>Although some children were more likely to have repeated accidents, this did not seem to be related to differences in social class. Instead, characteristics of the children, or the mother's attitudes to child rearing, seemed to be more relevant.</p> |
| <p>HASLUM, M.N. (1988) Length of pre-school hospitalisation, multi-admissions and later educational attainment and behaviour. Child Care: Health and Development, 14, 275-91.</p> | <p>Differences in educational performance and behaviour at age 10 years between 2900 hospitalized and 11,000 non-hospitalized children in the 1970 British Births Cohort were described previously. In the present analysis associations were found between the length of time children spent in hospital before the age of 5 years and performance on vocabulary tests at age 5 and age 10. Children whose first admission occurred between 2 and 5 years of age were particularly likely to show this association. There was also a relationship between the length of preschool hospitalization and reading and mathematics attainment at age 10. It was the number of times a child was admitted to hospital before the age of 5, rather than the length of stay, which was associated with antisocial and anxious behaviour at age 5. The association was evident when the first admission occurred between 2 and 5 years of age and not before age 2. There was no association with such behaviour at age 10 once social and family factors and readmission between ages 5 and 10 were taken into account. There was a strong association between admission between ages 5 and 10 and behaviour scores at age 10. The results are interpreted as providing evidence for a need to develop the hospital educational service to ameliorate these associations and to review schemes which reduce the anxiety-provoking aspects of hospitalization for young children.</p> |
| <p>STEWART-BROWN, S.L, PETERS, T.J, GOLDING, J and BIJUR, P. (1986) Case definition in childhood accident studies: a vital factor in determining results. International Journal of Epidemiology, 15(3), 352-359.</p> | <p>Research into possible aetiological factors associated with childhood accidents has failed to produce a consistent picture. In this paper we investigate the extent to which these discrepancies are attributable to different methods of case ascertainment. The approach was to use three different criteria for identifying accidents and to apply a number of commonly used statistical techniques to eight social and environmental factors. The data base consists of a nationally representative sample of 13135 children (the Child Health and Education Study). In this way, broadly similar profiles were obtained for children reported to have had at least one accident in the first five years and for those who were said to be accident repeaters—the major risk factors in common for these two outcomes were young maternal age and residence in 'average' or 'well-to-do' urban areas. On the other hand, there were major differences in the results when admission to hospital for an accident was taken as the</p> |

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| | outcome—although young maternal age was still strongly associated, large family size and the loss or replacement of a natural parent were now also dominant risk factors. There was no relationship with area of residence. The conclusion from these example analyses is therefore that variation in case selection can lead to different conclusions about the risk factors associated with childhood accidents. |
| TAYLOR, B, WADSWORTH, J and BUTLER, N.R. (1983) Teenage mothering: admission to hospital and accidents during the first five years. Archives of Disease in Childhood, 58(1), 6-11. | One thousand and thirty-one singleton children of teenage mothers were compared with 10 950 singleton children of older mothers in a national longitudinal cohort study. Children born to teenage mothers and living with them during the first 5 years were more liable to hospital admissions, especially after accidents and for gastroenteritis, than were children born to and living with older mothers. Frequent accidents, poisoning, burns, and superficial injuries or lacerations were more often reported by teenage mothers. The association of teenage mothering with greater likelihood that children would have accidents or be admitted to hospital remained highly significant even after controlling for social and biological confounding influences. Although in part a marker for adverse socioeconomic circumstances, low maternal age appears to be a health hazard for children. |
| WADSWORTH, J, BURNELL, I, TAYLOR, B and BUTLER, N.R. (1983) Family type and accidents in pre-school children. Journal of Epidemiology and Community Health, 37, 100-104. | Children living in single-parent families or stepfamilies were found to be more likely to suffer accidental injuries in their first five years of life than children living with two natural parents. Frequent household moves, low maternal age, and perceived poor behaviour in the child were all more strongly associated with overall accident rates than family type, and these disadvantages were more common in atypical families. Family type appeared to be the most important influence on hospital admission after accidents. Overall, there was a close similarity in accident rates between children of single-parent families and stepfamilies, and both groups were more at risk than children living with both natural parents. |

COGNITION-LANGUAGE

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| GOODMAN, J. (2012) The Wages of Sinistrality: Handedness, Brain Structure and Human Capital Accumulation. HKS Faculty Research Working Paper RWP12-002. Cambridge, Mass: Harvard University. | Left- and right-handed individuals have different brain structures, particularly in relation to language processing. Using five data sets from the US and UK, I show that poor infant health increases the likelihood of a child being left-handed. I argue that handedness can thus be used to explore the long-run impacts of differential brain structure generated in part by poor infant health. Even conditional on infant health and family background, lefties exhibit economically and statistically significant human capital deficits relative to righties. Compared to righties, lefties score a tenth of a standard deviation lower on measures of cognitive skill and, contrary to popular wisdom, are not over-represented at the high end of the distribution. Lefties have more emotional and behavioral problems, have more learning disabilities such as dyslexia, complete less schooling, and work in less cognitively intensive occupations. Differences between left- and right-handed siblings are similar in magnitude. Most strikingly, lefties have six percent lower annual earnings than righties, a gap that can largely be explained by these differences in cognitive skill, disabilities, schooling and occupational choice. Lefties work in more manually intensive occupations than do righties, further suggesting that lefties' primary labor market disadvantage is cognitive rather than physical. Those likely be left-handed due to genetics show smaller or no deficits relative to righties, suggesting the importance of environmental shocks as the source of disadvantage. Handedness provides parents and schools a costlessly observable characteristic with which to identify young children whose cognitive and behavioral development may warrant additional attention. |
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| <p>HASLUM, M.N. (1988) Length of pre-school hospitalisation, multi-admissions and later educational attainment and behaviour. <i>Child Care: Health and Development</i>, 14, 275-91.</p> | <p>Differences in educational performance and behaviour at age 10 years between 2900 hospitalized and 11,000 non-hospitalized children in the 1970 British Births Cohort were described previously. In the present analysis associations were found between the length of time children spent in hospital before the age of 5 years and performance on vocabulary tests at age 5 and age 10. Children whose first admission occurred between 2 and 5 years of age were particularly likely to show this association. There was also a relationship between the length of preschool hospitalization and reading and mathematics attainment at age 10. It was the number of times a child was admitted to hospital before the age of 5, rather than the length of stay, which was associated with antisocial and anxious behaviour at age 5. The association was evident when the first admission occurred between 2 and 5 years of age and not before age 2. There was no association with such behaviour at age 10 once social and family factors and readmission between ages 5 and 10 were taken into account. There was a strong association between admission between ages 5 and 10 and behaviour scores at age 10. The results are interpreted as providing evidence for a need to develop the hospital educational service to ameliorate these associations and to review schemes which reduce the anxiety-provoking aspects of hospitalization for young children.</p> |
| <p>HENDERSON, M, RICHARDS, M, STANSFELD, S and HOTOPF, M. (2012) The association between childhood cognitive ability and adult long-term sickness absence in three British birth cohorts: a cohort study. <i>BMJ Open</i>, 2(2), e000777.</p> | <p>The authors aimed to test the relationship between childhood cognitive function and long-term sick leave in adult life and whether any relationship was mediated by educational attainment, adult social class or adult mental ill-health.</p> <p>Setting The authors used data from the 1946, 1958 and 1970 British birth cohorts. Initial study populations included all live births in 1 week in that year. Follow-up arrangements have differed between the cohorts.</p> <p>Participants The authors included only those alive, living in the UK and not permanent refusals at the time of the outcome. The authors further restricted analyses to those in employment, full-time education or caring for a family in the sweep immediately prior to the outcome. 2894 (1946), 15 053 (1958) and 14 713 (1970) cohort members were included. Primary and secondary outcome measures: receipt of health-related benefits (eg, incapacity benefit) in 2000 and 2004 for the 1958 and 1970 cohorts, respectively, and individuals identified as 'permanently sick or disabled' in 1999 for 1946 cohort.</p> <p>Results After adjusting for sex and parental social class, better cognitive function at age 10/11 was associated with reduced odds of being long-term sick (1946: 0.70 (0.56 to 0.86), $p=0.001$; 1958: 0.69 (0.61 to 0.77), $p<0.001$; 1970: 0.80 (0.66 to 0.97), $p=0.003$). Educational attainment appeared to partly mediate the associations in all cohorts; adult social class appeared to have a mediating role in the 1946 cohort.</p> <p>Conclusions Long-term sick leave is a complex outcome with many risk factors beyond health. Cognitive abilities might impact on the way individuals are able to develop strategies to maintain their employment or rapidly find new employment when faced with a range of difficulties. Education should form part of the policy response to long-term sick leave such that young people are better equipped with skills needed in a flexible labour market.</p> |

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| <p>LAW, J, RUSH, R, SCHOON, I and PARSONS, S. (2009) Modeling Developmental Language Difficulties From School Entry Into Adulthood: Literacy, Mental Health, and Employment Outcomes. <i>Journal of Speech, Language and Hearing Research</i>, 52, 1401-1416</p> | <p>Purpose: Understanding the long-term outcomes of developmental language difficulties is key to knowing what significance to attach to them. To date, most prognostic studies have tended to be clinical rather than population-based, which necessarily affects the interpretation. This study sought to address this issue using data from a U.K. birth cohort of 17,196 children, following them from school entry to adulthood, examining literacy, mental health, and employment at 34 years of age. The study compared groups with specific language impairment (SLI), nonspecific language impairment (N-SLI), and typically developing language (TL).</p> <p>Method: Secondary data analysis of the imputed 5-year and 34-year data was carried using multivariate logistic regressions.</p> <p>Results: The results show strong associations for demographic and biological risk for both impairment groups. The associations are consistent for the N-SLI group but rather more mixed for the SLI group.</p> <p>Conclusions: The data indicate that both SLI and N-SLI represent significant risk factors for all the outcomes identified. There is a strong case for the identification of these children and the development of appropriate interventions. The results are discussed in terms of the measures used and the implications for practice.</p> |
| <p>LAW, J., RUSH, R., PARSONS, S. and SCHOON, I. (2012) The relationship between gender, receptive vocabulary and literacy from school entry through to adulthood. <i>International Journal of Speech-Language Pathology</i>, epub, 10 Oct 2012</p> | <p>It is commonly assumed that boys have poorer language skills than girls, but this assumption is largely based on studies with small, clinical samples or focusing on expressive language skills. This study examines the relationship between gender and receptive vocabulary, literacy, and non-verbal performance at 5 years through to adulthood. The participants were a UK birth cohort of 11,349 children born in one week in March 1970. Logistic regression models were employed to examine the association of gender with language and literacy at 5 and 34 years. Non-verbal abilities were comparable at 5 years, but there were significant differences for both receptive vocabulary and reading, favouring the boys and the girls, respectively. Boys but not girls who had parents who were poor readers were more likely to be not reading at 5 years. Gender was not associated with adulthood literacy. Boys may have a slight advantage over girls in terms of their receptive vocabulary, raising questions about the skills tested and the characteristics of clinical populations. The findings are discussed in terms of the nature of the way that children are assessed and the assumptions underpinning clinical practice.</p> |
| <p>LEASK S.J and CROW T.J. (2006) A single optimum degree of hemispheric specialisation in two tasks, in two UK national birth cohorts. <i>Brain and cognition</i>, 62(3), 221-227</p> | <p>How differences between the two sides of the brain (or ‘laterality’) relate to level of function are important components of theories of the origin and purpose of hemispheric asymmetry, although different measures show different relationships, and this heterogeneity makes discerning any underlying relationships a difficult task. There are some exceptions, for example it has been concluded that increasing lateralization (eg of hand skill or planum temporale area) occurs at the expense of the non-dominant hemisphere. However, we have previously demonstrated this latter relationship to be an artefact: a consequence of plotting two variables against each other, that are not independent of each other [Leask, S. J., & Crow, T. J. (1997) How far does the brain lateralize? An unbiased method for determining the optimum degree of hemispheric specialisation. <i>Neuropsychologia</i>, 36, 1275–1282; Mazoyer, B. M., & Tzourio-Mazoyer, N. G. (2004). Title Planum temporale asymmetry and models of dominance for language: a reappraisal. <i>Neuroreport</i>, 15, 1057–1059]. Two approaches to discerning any underlying relationships are presented in data from over 20,000 10- and 11-year olds from the 1958 and 1970 UK national cohort studies. These demonstrate that maximal performance, both cognitive and hand function, is found in association with one particular degree of functional lateralization.</p> |

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| <p>MONTGOMERY S, EHLIN A and SACKER A. (2006) Pre-pubertal growth and cognitive function. Archives of Disease in Childhood, 91, 61-62.</p> | <p>British longitudinal data were used to investigate the association of heights at 22 months and 5 years with a digit recall test at age 10 years. Greater height, particularly at 5 years, was associated with higher scores, suggesting that some exposures influence both growth and capability for cognitive function.</p> |
| <p>NICHOLLS, M., JOHNSTON, D.W. and SHIELDS, M.A. (2012) Adverse birth factors predict cognitive ability, but not hand preference. Neuropsychology, 26(5), 578-587.</p> | <p>Objective: There is a persistent theory that birth stress and subsequent brain pathology play an important role in the manifestation of left-handedness. Evidence for this theory, however, is mixed and studies are often beset with problems related to small sample sizes and unreliable health reports. Method: To avoid these issues, this study used a sample of approximately 10,000 children from the British Cohort Study. The study contains objective birth-health reports and comprehensive measures of socioeconomic status, handedness, cognitive ability, and behavioral/health issues. Results: Regression analyses showed that variables associated with birth stress affected cognitive/behavioral/health outcomes of the child. Despite this, these same factors did not affect the direction or degree of hand preference. Conclusions: We have therefore demonstrated a dissociation whereby adverse birth factors affect the brain's cognitive ability, but not handedness, and by implication, cerebral lateralization. The study also demonstrated a link between left-handedness and reduced levels of cognitive ability. This link cannot be due a generalized birth-stress mechanism and may be caused by specific mechanisms related to changes in cerebral dominance. (PsycINFO Database Record (c) 2012 APA, all rights reserved)</p> |
| <p>PARSONS, S, SCHOON, I , RUSH, R and LAW, J. (2011) Long-term Outcomes for Children with Early Language Problems: Beating the Odds. Children and Society, 25(3), 202–214</p> | <p>Using the 1970 British Cohort Study, this study examines factors promoting positive language development and subsequent successful education and employment transitions among children showing early receptive language problems (age 5). We find that 61 per cent of children with early receptive language problems develop into competent readers by age 10. Factors promoting positive language development include parental support and more importantly a good school environment, characterised by only few children receiving remedial help. Post-16 education and employment experiences indicated competent reading to be associated with a less challenging journey into adulthood. Findings are discussed in terms of their policy implications.</p> |
| <p>SCHOON, I, PARSONS, S and RUSH, R. (2010a) Childhood Language Skills and Adult Literacy: A 29-Year Follow-up Study. Pediatrics, 125(3), e459-e466</p> | <p>OBJECTIVE: Our aim was to assess the longitudinal trajectory of childhood receptive language skills and early influences on the course of language development.</p> <p>METHODS: Drawing on data collected for a nationally representative British birth cohort, the 1970 British Cohort Study, we examined the relationship between directly assessed early receptive language ability, family background, housing conditions, early literacy environment, and adult literacy skills. A sample of 11349 cohort members who completed the English Picture Vocabulary Test at 5 years of age were studied again at 34 years of age, when they completed a direct assessment of their basic literacy skills. We contrasted experiences of individuals with language problems at age 5 against the experiences of those with normal language skills at that age, assessing the role of socioeconomic family background and early literacy environment in influencing the longitudinal course of developmental language problems. Statistical comparisons of rates with χ^2 tests at P values of .001, .01, and .05 were made, as well as multivariate logistic regressions.</p> <p>RESULTS: Cohort members with receptive language problems at age 5 had a relatively disadvantaged home life in childhood, both in terms of socioeconomic resources and the education level of their parents, but also regarding their</p> |

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| | <p>exposure to a stimulating early literacy environment. Although there is significant risk for poor adult literacy among children with early language problems, the majority of these children develop competent functional literacy levels by the age of 34. Factors that reduce the risk for persistent language problems include the child being born into a working family, parental education beyond minimum school-leaving age, advantageous housing conditions, and preschool attendance.</p> <p>CONCLUSION: Effective literacy-promoting interventions provided by pediatric primary care providers should target both children and parents.</p> |
| <p>SCHOON, I, PARSONS, S, RUSH, R and LAW, J. (2010b) Children's language ability and psychosocial development: a 29-year follow-up study. <i>Pediatrics</i>, 126(1), e73-e80</p> | <p>OBJECTIVES: Little is known on the psychosocial adult outcomes of children's early language skills or intervening circumstances. The aim of this study was to assess the longitudinal trajectory linking childhood receptive language skills to psychosocial outcomes in later life.</p> <p>METHODS: The study comprised 6941 men and women who participated in a nationally representative Birth Cohort Study. Direct assessment of language skills were made at age 5. The sample was studied again at age 34 to assess psychosocial outcomes and levels of adult mental health. Characteristics of the family environment, individual adjustment, and social adaptation in the transition to adulthood were assessed as potential moderating factors linking early language skills to adult mental health.</p> <p>RESULTS: In early childhood, cohort members with poor receptive language experienced more disadvantaged socioeconomic circumstances than cohort members with normal language skills and showed more behavior and psychosocial adjustment problems in the transition to adulthood. At age 34, cohort members with poor early language skills reported lower levels of mental health than cohort members with normal language. After adjustment for family background and experiences of social adaptation, early language skills maintained a significant and independent impact in predicting adult mental health.</p> <p>CONCLUSIONS: Early receptive language skills are significantly associated with adult mental health as well as psychosocial adjustment during early childhood and in later life. The needs of children with language problems are complex and call for early and continuing provision of educational support and services.</p> |
| <p>TAYLOR,B and WADSWORTH,J. (1984) Breast feeding and child development at five years. <i>Developmental Medicine and Child Neurology</i>, 26(1), 73-80.</p> | <p>The influence of breast feeding on developmental tests at five years of age was assessed in a national study of 13,135 children. A positive correlation was found between duration of breast feeding and performance in tests of vocabulary and visuomotor co-ordination, behaviour score, and measurements of height and head circumference. The effect on vocabulary and visuomotor co-ordination persisted when allowance was made for intervening social and biological variables, but that on height and head circumference disappeared. The breast-feeding/behaviour score association remained significant but became non-linear after adjustment. Breast feeding had no discernable effect on speech problems during the first five years. It is concluded that breast feeding may have an effect on children's development at five years: the effect is relatively small but resistant to attempts at statistical control.</p> |

ASTHMA

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| <p>GHOSH, R. E., CULLINAN, P., FISHWICK, D., HOYLE, J., Warburton, C. J., Strachan, D. P., Butland, B. K. and Jarvis, D. (forthcoming 2013) Asthma and occupation in the 1958 birth cohort. <i>Thorax</i>, 68:365-371</p> | <p>Objective To examine the association of adult onset asthma with lifetime exposure to occupations and occupational exposures.</p> <p>Methods We generated lifetime occupational histories for 9488 members of the British 1958 birth cohort up to age 42 years. Blind to asthma status, jobs were coded to the International Standard Classification of Occupations 1988 and an Asthma Specific Job Exposure Matrix (ASJEM) with an expert re-evaluation step. Associations of jobs and ASJEM exposures with adult onset asthma were assessed in logistic regression models adjusting for sex, smoking, social class at birth and childhood hay fever.</p> <p>Results Of the 7406 cohort members with no asthma or wheezy bronchitis in childhood, 639 (9%) reported asthma by age 42 years. Adult onset asthma was associated with 18 occupations, many previously identified as risks for asthma (eg, farmers: OR 4.26, 95% CI 2.06 to 8.80; hairdressers: OR 1.88, 95% CI 1.24 to 2.85; printing workers: OR 3.04, 95% CI 1.49 to 6.18). Four were cleaning occupations and a further three occupations were likely to use cleaning agents. Adult onset asthma was associated with five of the 18 high-risk specific ASJEM exposures (flour exposure: OR 2.12, 95% CI 1.17 to 3.85; enzyme exposure: OR 2.32, 95% CI 1.22 to 4.42; cleaning/disinfecting products: OR 1.67, 95% CI 1.26 to 2.22; metal and metal fumes: OR 1.45, 95% CI 1.02 to 2.07; textile production: OR 1.71, 95% CI 1.12 to 2.61). Approximately 16% (95% CI 3.8% to 27.1%) of adult onset asthma was associated with known asthmagenic occupational exposures.</p> <p>Conclusions This study suggests that about 16% of adult onset asthma in British adults born in the late 1950s could be due to occupational exposures, mainly recognised high-risk exposures.</p> |
| <p>GOLDING, J, BUTLER, N.R and TAYLOR, B.W. (1982) Breast feeding and eczema/asthma. <i>Lancet</i>, 319(8272), 623.</p> | <p>Letter to the editor.</p> |
| <p>HANCOX, R, J, SUBBARAO, P and SEARS, M.R. (2012) Relevance of Birth Cohorts to Assessment of Asthma Persistence. <i>Current Allergy and Asthma Reports</i>, 12(3), 175-184.</p> | <p>The definition of persistent asthma in longitudinal studies reflects symptoms reported at every assessment with no substantive asymptomatic periods. Early-childhood wheezing may be transient, especially if it is of viral aetiology. Longitudinal studies provide greater opportunity to confirm the diagnosis by variability of symptoms, objective measurements, and therapeutic responses. Several clinical phenotypes of childhood asthma have been identified, with general consistency between cohorts. Persistent wheezing is often associated with loss of lung function, which is evident from early-childhood and related to persistent inflammation and airway hyper responsiveness. Female sex, atopy, airway responsiveness, and personal smoking, but not exposure to environmental tobacco smoke, are risk factors for persistence of childhood asthma into adulthood. The effect of breastfeeding remains controversial, but gene–environment interactions may partly explain outcomes. Understanding the natural history and underlying causes of asthma may lead to development of strategies for primary prevention.</p> |

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| <p>LEWIS, S, BUTLAND, B, STRACHAN, D.P, BYNNER, J, RICHARDS, D, BUTLER, N.R and BRITTON, J. (1996) Study of the aetiology of wheezing illness at age 16 in two national British birth cohorts. Thorax, 51, 670-676.</p> | <p>BACKGROUND:Data from two national British birth cohorts were used to measure the increase in prevalence of wheezing illness at age 16 between 1974 and 1986, and to investigate the role of several potential risk factors in the increase.</p> <p>METHODS: The occurrence of self-reported asthma or wheezy bronchitis within the past year, and the frequency of attacks of wheezing illness at age 16, were compared in 11,262 and 9266 children born in one week of 1958 and 1970, respectively. The effects of several putative risk factors for asthma--including birth weight, maternal age, birth order, breast feeding, maternal smoking in pregnancy, child's personal smoking, and father's social class--on the change in occurrence of wheezing illness at age 16 were assessed by multiple logistic regression.</p> <p>RESULTS: The annual period prevalence of asthma or wheezy bronchitis at age 16 increased from 3.8% in 1974 to 6.5% in 1986 (prevalence ratio (PR) = 1.71, 95% CI 1.52 to 1.93). The proportion of children experiencing attacks more than once a week increased from 0.2% to 0.7% (PR = 3.77, 95% CI 2.28 to 6.23). The prevalence of self-reported eczema and hayfever within the past year doubled between 1974 and 1986, suggesting that the increase in asthma was part of a general increase in the prevalence of atopic disease. However, in the complete dataset, after adjustment for the effects of the risk factors studied, the prevalence odds ratio for asthma or wheezy bronchitis in 1986 compared with 1974 was virtually unchanged from the unadjusted value at 1.77 (95% CI 1.46 to 2.15).</p> <p>CONCLUSION: The prevalence of wheezing illness in British teenagers increased by approximately 70% between 1974 and 1986. This increase appears to have occurred in the context of a general increase in atopic disease and was largely unexplained by changes in the distribution of maternal age, birth order, birth weight, infant feeding, maternal smoking, active smoking by the child, or father's social class.</p> |
| <p>NEUSPIEL, D.R, RUSH, D, BUTLER, N.R, GOLDING, J, BIJUR, P.E and KURZON, M. (1989) Parental smoking and post-infancy wheezing in children: a prospective cohort study. American Journal of Public Health, 79, 1-4.</p> | <p>The contribution of parental smoking to wheezing in children was studied in a subset of all British births between April 5 and 11, 1970 (N = 9,670). Children of smoking mothers had an 18.0 per cent cumulative incidence of post-infancy wheezing through 10 years of age, compared with 16.2 per cent among children of nonsmoking mothers (risk ratio 1.11, 95% CI: 1.02, 1.21). This difference was confined to wheezing attributed to wheezy bronchitis, of which children of smokers had 7.4 per cent, and those of nonsmokers had 5.2 per cent (risk ratio 1.44, 95% CI: 1.24, 1.68). The incidence of wheezy bronchitis increased as mothers smoked more cigarettes. After multiple logistic regression analysis was used to control for paternal smoking, social status, sex, family allergy, crowding, breast-feeding, gas cooking and heating, and bedroom dampness, the association of maternal smoking with childhood wheezy bronchitis persisted. Some of this effect was explained by maternal respiratory symptoms and maternal depression, but not by neonatal problems, the child's allergic symptoms, or paternal respiratory symptoms. There was a 14 per cent increase in childhood wheezy bronchitis when mothers smoked over four cigarettes per day, and a 49 per cent increase when mothers smoked over 14 cigarettes daily.</p> |

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| <p>PARK, E.S, GOLDING, J, CARSWELL, F and STEWART-BROWN, S. (1986) Pre-school wheezing and prognosis at 10. Archives Disease in Childhood, 61(7), 642-646.</p> | <p>Information was collected at birth and at 5 and 10 years of age on the national cohort of children born in one week of April 1970 (the Child Health and Education Study). For 11 465 children, information on wheezing attacks before 5 years was compared with reports of wheezing occurring in the 12 months before the interview at 10 years. Of 2345 children who had had at least one wheezing attack before their fifth birthday, 80% (1869) were free of wheeze at 10 years; only 8% of children who had just one wheezing attack by 5 years wheezed in their 10th year. The more attacks the child had had by the age of 5 the higher the risk of continuing to wheeze at the age of 10, but there were no major differences in prognosis according to the age of the first attack. Half of the children who had been labelled asthmatic at the age of 5 were wheezing at the age of 10 compared with an eighth of those with wheezing not so labelled. There was little evidence to suggest that the prognosis of wheezing with bronchitis was markedly different from that of children with other episodes of wheezing provided they were not said to be asthmatic. A longer follow up is necessary to ascertain whether remission at the age of 10 is followed by relapse later.</p> |
| <p>SHAHEEN, S.O, STERNE, J.A.C, MONTGOMERY, S.M and AZIMA, H. (1999) Body mass index, asthma and wheeze in young adults. Thorax, 54, 396-402.</p> | <p>BACKGROUND Impaired fetal growth may be a risk factor for asthma although evidence in children is conflicting and there are few data in adults. Little is known about risk factors which may influence asthma in late childhood or early adult life. Whilst there are clues that fatness may be important, this has been little studied in young adults. The relations between birth weight and childhood and adult anthropometry and asthma, wheeze, hayfever, and eczema were investigated in a nationally representative sample of young British adults.</p> <p>METHODS A total of 8960 individuals from the 1970 British Cohort Study (BCS70) were studied. They had recently responded to a questionnaire at 26 years of age in which they were asked whether they had suffered from asthma, wheeze, hayfever, and eczema in the previous 12 months. Adult body mass index (BMI) was calculated from reported height and weight.</p> <p>RESULTS The prevalence of asthma at 26 years fell with increasing birth weight. After controlling for potential confounding factors, the odds ratio comparing the lowest birth weight group (<2 kg) with the modal group (3–3.5 kg) was 1.99 (95% CI 0.96 to 4.12). The prevalence of asthma increased with increasing adult BMI. After controlling for birth weight and other confounders, the odds ratio comparing highest with lowest quintile was 1.72 (95% CI 1.29 to 2.29). The association between fatness and asthma was stronger in women; odds ratios comparing overweight women (BMI 25–29.99) and obese women (BMI ≥30) with those of normal weight (BMI <25) were 1.51 (95% CI 1.11 to 2.06) and 1.84 (95% CI 1.19 to 2.84), respectively. The BMI at 10 years was not related to adult asthma. Similar associations with birth weight and adult BMI were present for wheeze but not for hayfever or eczema.</p> <p>CONCLUSIONS Impaired fetal growth and adult fatness are risk factors for adult asthma.</p> |

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| <p>SLY, M.E. (1999) Changing prevalence of allergic rhinitis and asthma. <i>Annals of Allergy, Asthma and Immunology</i>, 82(3), 233-252.</p> | <p>Objective</p> <p>This review will enable the reader to discuss prevalence, risk factors, and prognosis of allergic rhinitis and asthma.</p> <p>Data Sources</p> <p>MEDLINE (PubMed) search using the terms allergic rhinitis, asthma, prevalence, risk factors.</p> <p>Study selection</p> <p>Human studies published in the English language since 1978, especially studies of relatively large populations in the United States, Great Britain, Australia, and New Zealand, with cross referencing to earlier relevant studies.</p> <p>Results</p> <p>Current prevalence of allergic rhinitis at 16 years of age in cohorts of British children born in 1958 and 1970 increased from 12% in the earlier cohort to 23% and in the later cohort. Local surveys of allergic rhinitis at approximately 18 years of age in the United States in 1962 to 1965 disclosed prevalence of 15% to 28%, while the national survey of 1976 to 1980 disclosed a prevalence of 26%. Thus, it is uncertain whether prevalence of allergic rhinitis has changed in the United States based on these limited data.</p> <p>Data from several sources indicate worldwide increases in prevalence of asthma. Annual Health Interview surveys indicate increases in prevalence of asthma in the United States from 3.1% in 1980 to 5.4% in 1994, but prevalence among impoverished inner city children has been much higher. Combined prevalence of diagnosed and undiagnosed asthma among inner city children has been 26% and 27% at 9 to 12 years of age in Detroit and San Diego. Positive family history and allergy are important risk factors for allergic rhinitis and asthma. Prognosis is guarded; allergic rhinitis resolves in only 10% to 20% of children within 10 years, and at least 25% of young adults who have had asthma during early childhood are symptomatic as adults.</p> <p>Conclusion</p> <p>Increases in prevalence remain unexplained, but avoidance of recognized allergens should reduce the prevalence of allergic rhinitis and asthma.</p> |
| <p>STRACHAN, D.P, GOLDING, J and ANDERSON, H.R. (1990) Regional variations in wheezing illness in British children: effect of migration during early childhood. <i>Journal of Epidemiology and Community Health</i>, 44, 231-236.</p> | <p>STUDY OBJECTIVE--The aim was to examine the regional distribution of wheezing illness among British children, and the age at which geographical differences may be determined. DESIGN--Cross sectional analyses and study of interregional migrants were used. SUBJECTS--The subjects were national cohorts of British children born in 1958 and 1970. MEASUREMENTS AND MAIN RESULTS--The regional distribution of wheezing illness showed significant heterogeneity at age 5 (1970 cohort) and 7 (1958 cohort). In both cohorts, children in Scotland had a low prevalence of wheeze, which could not be attributed to underreporting of mild cases. There was a less consistent tendency for high prevalence in Wales, and in the South Western and Midlands regions of England. In the 1958 cohort, the regional differentials diminished progressively with age and were negligible at age 23. There was a poor correlation between the regional distribution of childhood asthma and the common geographical pattern shown by eczema in infancy and hay fever at age 23. Analysis of interregional</p> |

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| | <p>migrants suggested that the regional variation in each cohort at age 5-7 was primarily related to the region of current residence, and not to the region of birth. CONCLUSIONS--Genetic constitution, perinatal exposures, or early childhood experiences are unlikely to account for the regional variation in wheezing illness. Although local patterns of symptom reporting or disease labelling may be acquired by parents who move to a new region, environmental factors operating at a regional level probably determine the prevalence of asthma in primary school children. These influences do not appear to have long lasting effects upon the tendency to wheeze in adolescence and early adulthood.</p> |
| <p>TURNER, S. (2012) Childhood respiratory cohort studies: do they generate useful outcomes? <i>Breathe</i>, 8(3), 194-204.</p> | <p>Summary</p> <p>Cohort studies give insight into the evolution of respiratory disease over time and provide a low level of evidence for causation. The initial pioneering cohort studies in which symptoms and/or exposures were captured in early life and related to respiratory outcome in later life are now part of a large family which is diverse in age and exposures; however, asthma remains a fairly constant outcome.</p> <p>This article aims to first describe the strengths and weaknesses of the various asthma cohort studies. Thereafter, the article aims to describe the insight that cohort studies have given into asthma causation, with a focus on relative magnitude of effect, and also to describe the relative weight of factors identified in cohort studies as predictors of persisting asthma symptoms. It is clear that many factors are implicated in asthma causation; in isolation, each exerts a rather modest positive or negative effect on causation, but are likely to be acting in combination and modifying each other's relative risk. There is no single "good" predictor of asthma outcome, but the coexistence of parental asthma/atopy in a child with at least three episodes of wheeze by their third birthday</p> <p>indicates a high relative risk for asthma at 11–13 years of age. There remains no cure for asthma and the next step needs to apply what cohort studies have taught us to intervention studies where several exposures are modified in at risk individuals during the first year of life.</p> |
| ECZEMA | |
| <p>BUTLAND, B.K, STRACHAN, D.P, LEWIS, S, BYNNER, J, BUTLER, N.R and BRITTON, J. (1997) Investigation into the increase in hay fever and eczema at age 16 observed between the 1958 and 1970 British birth cohorts. <i>British Medical Journal</i>, 315(7110), 717-721.</p> | <p>Objective: To investigate whether changes in certain perinatal and social factors explain the increased prevalence of hay fever and eczema among British adolescents between 1974 and 1986.</p> <p>Design: Two prospective birth cohort studies.</p> <p>Setting: England, Wales, and Scotland.</p> <p>Subjects: 11 195 children born 3-9 March 1958 and 9387 born 5-11 April 1970.</p> <p>Main outcome measures: Parental reports of eczematous rashes and of hay fever or allergic rhinitis in the previous 12 months at age 16.</p> <p>Results: The prevalence of the conditions over the 12 month period increased between 1974 and 1986 from 3.1% to 6.4% (prevalence ratio 2.04 (95% confidence interval 1.79 to 2.32) for eczema and from 12.0% to 23.3% (prevalence ratio 1.93 (1.82 to 2.06)) for hay fever. Both conditions were more commonly reported among children of higher birth order and those</p> |

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| | <p>who were breast fed for longer than 1 month. Eczema was more commonly reported among girls and hay fever among boys. The prevalence of hay fever decreased sharply between social classes I and V, increased with maternal age up to the early 30s, and was lower in children whose mothers smoked during pregnancy. Neither condition varied significantly with birth weight. When adjusted for these factors, the relative odds of hay fever (1986 v 1974) increased from 2.23 (2.05 to 2.43) to 2.40 (2.19 to 2.63). Similarly, the relative odds of eczema rose from 2.02 (1.73 to 2.36) to 2.14 (1.81 to 2.52).</p> <p>Conclusions: Taken together, changes between cohorts in sex, birth weight, birth order, maternal age, breast feeding, maternal smoking during pregnancy, and father's social class at birth did not seem to explain any of the observed rise in the prevalence of hay fever and eczema. However, correlates of these factors which have changed over time may still underlie recent increases in allergic disease.</p> |
| GOLDING, J, BUTLER, N.R and TAYLOR, B.W. (1982a) Breast feeding and eczema/asthma. Lancet, 319(8272), 623. | Letter to the editor. |
| GOLDING, J, HICKS, P and BUTLER, N.R. (1982b) Eczema in the First Five Years. Bristol: Department of Child Health, University of Bristol. | Unavailable. |
| GOLDING, J and PETERS, T.J. (1987) The Epidemiology of Childhood Eczema: I. A population based study of associations. Paediatric & Perinatal Epidemiology, 1, 67-79. | <p>Summary. Information on whether they thought their child had ever had eczema was obtained from the mothers of 12 555 children in a national cohort of five-year-olds born in 1970. This question was part of a multiple battery of questions concerning the medical, social, environmental and behavioural background of the child. These data were linked to the information that had been collected on the cohort at birth, and a profile of characteristics of the children with reported eczema was produced.</p> <p>A large proportion (46/135) of associations were statistically significant at the 1% level. The major associations were with socio-economic indicators and characteristics of parental health behaviour, with the most advantaged socio-economic groups and those with more positive health behaviour having increased rates of reported eczema. The patterns of associations form an interesting profile of the backgrounds of children reported to have had eczema. Identification of these factors was necessary before more advanced statistical techniques were employed to investigate which of these variables predominate when they are considered simultaneously, and to generate hypotheses as to which factors may be causally associated with the disorder.</p> |
| PETERS, T.J and GOLDING, J. (1987) The Epidemiology of Childhood Eczema: II. Statistical analyses to identify independent early predictors. Paediatric and Perinatal Epidemiology, 1, 80-94. | <p>Summary. Amongst a nationally representative sample of singletons born in one week of April 1970 for whom information was available, 12.3% were reported by their mothers as having developed eczema at some time before their fifth birthday. Data from both the birth and the five-year follow-up surveys have been analysed to identify the independent early predictors of this (reported) condition in 11 920 children.</p> <p>Using an initial set of possible predictors suggested by previous analyses of these data, the dominant risk characteristics</p> |

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| | <p>have been identified as: a positive maternal history of eczema; a positive maternal history of asthma or hay fever; higher parental educational qualifications and the mother originating from the West Indies or Africa. There were also increased risks for children of mothers born in England (relative to the rest of the United Kingdom) and for children of mothers who used contraceptives in the 18 months prior to the index pregnancy.</p> <p>There was no protective effect of breast-feeding even among children whose mothers had a history of allergy.</p> |
| PETERS, T.J, GOLDING, J and BUTLER, N.R. (1985) Breast-feeding and childhood eczema. Lancet, 325(8419), 49-50. | Letter to the editor. |
| TAYLOR, B, WADSWORTH, J, GOLDING, J and BUTLER, N.R. (1983) Breast feeding, eczema and hay fever. Journal of Epidemiology and Community Health, 37, 95-99. | <p>The association of breast feeding with rates of atopic illness during the first five years of life was assessed in a national study of 13 135 children studied during the first week and at age 5 years. Eczema was reported more often in children who had been breast fed; this relationship persisted even after allowance was made for social and family factors influencing the likelihood both of breast feeding and of eczema; the other factors most significantly associated with rates of eczema were parental history of eczema or asthma and advantaged family socioeconomic status. A similar, but less pronounced, positive association of breast feeding with reported hayfever became non-significant after adjustment for intervening factors. Rates of reported asthma were not influenced by breast feeding. "Any wheezing" including asthma was reported more often in children who had not been breast fed, but this association disappeared after adjustment for parental asthma and maternal smoking. Breast feeding does not appear to protect against these atopic diseases. The positive association with reported eczema might relate to accuracy of diagnosis or to associated influences not considered in the analysis; alternatively, it might be due to (recent) environmental contaminants crossing in breast milk, causing eczema in the child.</p> |
| TAYLOR, B, WADSWORTH, J, WADSWORTH, M.E.J and PECKHAM, C.S. (1985) Rising incidence of eczema. Lancet, 325(8426), 464-465. | <p>Rates of reported eczema during early childhood were studied in 3 national cohorts of children born in 1946, 1958, and 1970. Overall rates rose from 5.1% in children born in 1946, to 7.3% in those born in 1958, to 12.2% in the 1970 cohort. In the 1958 and 1970 cohorts there was a positive association between eczema and breastfeeding. This relationship remained significant after allowing for parental history of allergy and socioeconomic status. Social classes I and II children born in 1946 were less likely to be reported as having eczema, compared with children from lower social classes, whereas children born into higher social classes in 1958 and 1970 had higher rates. These findings may reflect secular changes in the diagnosis of eczema or may represent a real increase in the disorder. The positive association with breastfeeding in the more recent cohorts suggests a new environmental agent may be crossing in breast-milk. The agent(s) may well be in other infant foods, since the rate of reported eczema in non-breastfed children rose from 5.7% in the 1946 and 1958 cohorts to 11.1% of children born in 1970.</p> |
| TAYLOR,B, WADSWORTH,J, WADSWORTH,M and PECKHAM,C. (1984) Changes in the reported prevalence of childhood eczema since the 1939-45 war. Lancet, 324(8414), 1255-7. | <p>Rates of reported eczema during early childhood were studied in 3 national cohorts of children born in 1946, 1958, and 1970. Overall rates rose from 5.1% in children born in 1946, to 7.3% in those born in 1958, to 12.2% in the 1970 cohort. In the 1958 and 1970 cohorts there was a positive association between eczema and breastfeeding. This relationship remained significant after allowing for parental history of allergy and socioeconomic status. Social classes I and II children born in 1946 were less likely to be reported as having eczema, compared with children from lower social classes, whereas children born into higher social classes in 1958 and 1970 had higher rates. These findings may reflect secular changes in the diagnosis of eczema or may represent a real increase in the disorder. The positive association with breastfeeding in the</p> |

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| | more recent cohorts suggests a new environmental agent may be crossing in breast-milk. The agent(s) may well be in other infant foods, since the rate of reported eczema in non-breastfed children rose from 5.7% in the 1946 and 1958 cohorts to 11.1% of children born in 1970. |
| EPILEPSY | |
| GOLDING, J and BUTLER, N.R. (1983) Convulsive disorders in the Child Health and Education Study. In CLIFFORD ROSE, G (ed), Research Progress in Epilepsy. London: Pitman. | No abstract (book chapter). |
| Verity, C. M., Butler, N. R. and Golding, J. (1985) Febrile convulsions in a national cohort followed up from birth. I--Prevalence and recurrence in the first five years of life, <i>British medical journal</i> 290(6478): 1307. | Of 13 135 children followed up from birth to the age of 5 years, 303 (2.3%) had febrile convulsions. Prior neurological abnormality had been noted in 13. Of the 290 remaining children, 57 (20%) presented with a complex convulsion, and 103 children (35%) went on to have further febrile convulsions. The risk of further febrile convulsions varied with the age at first convulsion and the presence of a history of convulsive disorders in relatives. There were no significant differences between the sexes. |
| Verity, C. M., Butler, N. R. and Golding, J. (1985) Febrile convulsions in a national cohort followed up from birth. II--Medical history and intellectual ability at 5 years of age, <i>British medical journal</i> 290(6478): 1311. | Three hundred and three children with febrile convulsions were identified in a national birth cohort of 13 135 children followed up from birth to the age of 5 years. Breech delivery (p less than 0.05) was the only significantly associated prenatal or perinatal factor. There were no associations with socioeconomic factors. Excluding the 13 known to be neurologically abnormal before their first febrile convulsion, children who had had a febrile convulsion did not differ at age 5 from their peers who had not had febrile convulsions in their behaviour, height, head circumference, or performance in simple intellectual tests. |
| Verity, C. M., Greenwood, R. and Golding, J. (1998) Long-term intellectual and behavioral outcomes of children with febrile convulsions, <i>New England Journal of Medicine</i> 338(24): 1723-1728. | <p>Many parents think that their child is dying when he or she has a febrile convulsion,¹ and they are concerned that epilepsy or mental retardation may result. Febrile convulsions are common, occurring in 2 to 4 percent of children at least once before five years of age.^{2,3} Mental retardation has been reported in up to 22 percent of children with febrile convulsions who were hospitalized or seen in specialized clinics.⁴⁻⁶ In contrast, the National Collaborative Perinatal Project, a large, prospective American study that enrolled approximately 54,000 pregnant women between 1959 and 1966 and followed their children, found that children who had febrile convulsions did not differ in intelligence from their normal seizure-free siblings at seven years of age.⁷</p> <p>A prospective British study, the Child Health and Education Study, enrolled a cohort of over 16,000 children born in one week in April 1970. We have previously reported on the outcome at five years of the children in the cohort who had febrile convulsions. At the age of 10, the children underwent a more comprehensive assessment of intellect and behavior. We report the results of this assessment in this article.</p> |

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| <p>VERITY, C.M, ROSS, E.M and GOLDING, J. (1992) Epilepsy in the first 10 years of life: findings of the child health and education study. <i>British Medical Journal</i>, 305(6858), 857-861.</p> | <p>OBJECTIVES--To identify children with afebrile seizures in a national cohort, classify the seizures, and document progress in the first 10 years of life. DESIGN--Population based birth cohort study. SETTING--The child health and education study, which includes 16,004 neonatal survivors (98.5% of infants born in the United Kingdom during one week of April 1970). SUBJECTS--14,676 children for whom relevant information was available. MAIN OUTCOME MEASURES--Responses to parental and general practitioner questionnaires and hospital records at 5 and 10 years after birth. RESULTS--84 children (42 boys, 42 girls) had had one or more afebrile seizure (incidence 5.7/1000). 63 children (31 boys, 32 girls) had epilepsy (incidence 4.3/1000). 49 of 55 children had a second seizure within a year of the first. The commonest seizure types were tonic-clonic (42) and complex partial (25). A greater proportion of children with complex partial seizures had recurrences. Children who had infantile spasms or a mixed seizure disorder had a poor outcome. All six children who died had symptomatic seizures in the first year, but seizures were not the direct cause of death. CONCLUSIONS--The results of this study are probably representative of seizure patterns in the general population. Outcome after seizures is determined more by the underlying disease than by the seizures themselves.</p> |
| <p>VERITY, C.M, ROSS, E.M and GOLDING, J. (1993) Outcome of childhood status epilepticus and lengthy febrile convulsions: findings of national cohort study. <i>British Medical Journal</i>, 307, 225-228.</p> | <p>OBJECTIVE: To study outcome after lengthy febrile convulsions and status epilepticus in children. DESIGN: Population based birth cohort study. SETTING: The child health and education study (16,004 neonatal survivors born in one week in April 1970). SUBJECTS: Information available for 14,676 children. OUTCOME MEASURES: Clinical information and tests of intellectual performance at five and 10 years after birth. RESULTS: 19 children had lengthy febrile convulsions and 18 had status epilepticus. Two children with status epilepticus died (one at 5 years old); neither death was directly due to the status epilepticus. Four of the 19 (21%) developed afebrile seizures after lengthy febrile convulsions compared with 14 of the 17 (82%) survivors after status epilepticus. Measures of intellectual performance were available for 33 of the 35 survivors: 23 were normal and 10 were not normal but eight of them had preceding developmental delay or neurological abnormality. CONCLUSION: The outcome in children after lengthy febrile convulsions and status epilepticus is better than reported from studies of selected groups and seems determined more by the underlying cause than by the seizures themselves.</p> |

DEPRESSION AND EMOTIONAL WELLBEING

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| <p>BERRINGTON, A.M, BORGONI, R, SMITH, P.W.F, INGHAM, R and STEVENSON, J. (2010) Life course determinants of poor psychosocial health in adulthood: young motherhood as a mediating pathway. University of Southampton Statistical Sciences Institute Applications and Policy Working Paper, 10/02. Southampton: University of Southampton</p> | <p>This paper takes a life course approach, viewing an individual's health status as an outcome of their parental background, experiences in childhood and adolescence and adult circumstances. By using a graphical chain model, the paper investigates whether young motherhood plays an independent role as a mediating pathway through which socio-economic disadvantage in childhood is associated with poor psychosocial health in adulthood. Prospectively collected data from a national birth cohort study of women born in Britain in 1970 allow us to demonstrate the direct and indirect ways in which young motherhood is associated with later health status. Two measures of health status at age 30 are used: malaise, and the 12 question version of the General Health Questionnaire (GHQ12). Young motherhood is found to be a key mediating factor in the development of socio-economic differentials in adult health, particularly the incidence of malaise. Psycho-social morbidity as measured by GHQ12 is more related to current circumstances and only indirectly related to past life course experiences.</p> |
| <p>BARTLEY, M, SACKER, A and SCHOON, I. (2002). Social and economic trajectories and women's health. In KUH, D and HARDY, R (ed), A lifecourse approach to women's health. Oxford: Oxford University Press.</p> | <p>No abstract: book chapter</p> |
| <p>CABLE, N, BARTLEY, M, McMUNN, A and KELLY, Y. (2010) Gender differences in the effect of breast feeding on adult psychological well-being. Journal of Epidemiology and Community Health, 64(Suppl.1), A4-A5.</p> | <p>Objective To examine the changes in the social distribution of breast feeding and its effect on the psychological well-being of adults via the pathway of childhood psychological health. Design Prospective cohort study. Setting We used two British Birth Cohort Studies: National Child Developmental Study (NCDS, born in 1958) and 1970 British Birth Cohort Study (BCS70, born in 1970). Participants Those who completed information on childhood data (breast feeding, mother's educational level, parenthood at birth, presence of older sibling, and psychosocial adjustment) and mid-adulthood (psychological ill health and self-efficacy) were included in this study (NCDS: N=7750; BCS70: N=6492). Main outcome measure Childhood psychosocial adjustment was measured by the Bristol Social Adjustment Guides for the NCDS (collected at age 11) and the Rutter scale graded by a teacher for the BCS70 (collected at age 10). Adult psychological well-being (NCDS=age 33; BCS70=age 30) was indicated by psychological ill health and self-efficacy. Adult psychological ill health was indicated by the Malaise Inventory with a cutoff point of 7 or above. Self-efficacy was derived from the response to questions asking the study participants about their perceived level of control over their life. Methods A dichotomised index of childhood adversity was created after tabulating information about parenthood, mother's age, mother's education, and presence of older siblings. The effect of breast feeding on childhood psychosocial adjustment and adult psychological well-being was examined using logistic regression. Men and women were analysed separately and the effects of breast feeding on the outcomes were adjusted for confounders. Results Findings showed that the magnitude of the effect of breast feeding on adult psychological well-being is larger in</p> |

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| | <p>women than in men. After accounting for the effect of childhood social adversity, breast feeding promoted psychosocial adjustment during childhood in girls in NCDS (OR 1.25, 95% CI 1.05 to 1.48) and in BCS70 (OR 1.44, 95% CI 1.15 to 1.81), but not in boys.</p> <p>In adulthood, being breast fed at birth was associated with higher self-efficacy (OR 1.31, 95% CI 1.06 to to 1.61) and lower risk of psychological ill health (OR 0.76, 95% CI 0.61 to to 0.96) in women in BCS70 only. However, no significant interaction effect was found between breast feeding and childhood social adversity.</p> <p>Conclusion Although breast feeding did not moderate the negative effect of childhood social adversity on childhood or adulthood outcomes in this study, findings suggest that the practice of breast feeding can be important for women's psychological well-being throughout the lifecourse.</p> |
| CHARLTON, A and WHILE, D. (1996) Smoking and menstrual problems in 16-year-olds. Journal of the Royal Society of Medicine, 89(4), 193-195. | <p>The British Birth Cohort Study (BCS70) is a cohort study which follows all the people born in England, Scotland and Wales in the week of 5-11 April 1970. The data described here were from the postal questionnaires returned by 2181 young women aged between 16 and 16 1/2 in 1986. Thirty-nine per cent of the respondents had never smoked, 39% had smoked at some time and 22% were regular smokers. Most of the respondents indicated that they had one or more of the following symptoms associated with menstruation: pain, depression, irritability, headaches, cramps. Analysis of the data showed that regular smokers were significantly more likely than those who had never smoked to have all these symptoms. Whilst the percentage of 'sometime smokers' experiencing pain, depression and headaches fell between smokers and 'never-smokers', the percentage experiencing unpleasant symptoms in general, irritability and cramps was the same as for regular smokers. If causality could be demonstrated, messages about immediate health problems such as these might be more powerful health education to young women than information about long-term risks.</p> |
| CHEUNG, Y.B. (2001) Adjustment for selection bias in cohort studies: an application of a probit model with selectivity to life course epidemiology. Journal of Clinical Epidemiology, 54(12), 1238-1243. | |
| COLLISHAW, S, MAUGHAN, B, NATARAJAN, L and PICKLES, A. (2010) Trends in adolescent emotional problems in England: a comparison of two national cohorts twenty years apart. Journal of Child Psychology and Psychiatry, 51(8), 885-894. | <p>Background: Evidence about trends in adolescent emotional problems (depression and anxiety) is inconclusive, because few studies have used comparable measures and samples at different points in time. We compared rates of adolescent emotional problems in two nationally representative English samples of youth 20 years apart using identical symptom screens in each survey.</p> <p>Methods: Nationally representative community samples of 16–17-year-olds living in England in 1986 and 2006 were compared. In 1986, 4524 adolescents and 7120 parents of young people participated in the age-16-year follow-up of the 1970 British Cohort Study. In 2006, 719 adolescents and 734 parents participated in a follow-up of children sampled from the 2002/2003 Health Surveys for England. Adolescents completed the Malaise Inventory and 12-item General Health Questionnaire. Parents completed the Rutter-A scale. Individual symptoms of depression and anxiety were coded combining across relevant questionnaire items. Young people also reported frequency of feeling anxious or depressed.</p> <p>Results: Youth- and parent-reported emotional problems were more prevalent in 2006 for girls, and rates of parent-reported</p> |

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| | <p>problems increased for boys. Twice as many young people reported frequent feelings of depression or anxiety in 2006 as in 1986. Some symptoms showed marked change in prevalence over time (e.g., worry, irritability, fatigue), whereas others showed no change (e.g., loss of enjoyment, worthlessness). There was no evidence of differential trends in emotional problems for young people from socially advantaged and disadvantaged or intact and non-intact families. Changes in family structure and ethnic composition did not account for trends in youth emotional problems.</p> <p>Conclusions: The study provides evidence for a substantial increase in adolescent emotional problems in England over recent decades, especially among girls.</p> |
| <p>COLLISHAW, S, MAUGHAN, B, GOODMAN, R and PICKLES, A. (2004) Time trends in Adolescent Mental Health. <i>Journal of Child Psychology and Psychiatry</i>, 45(8), 1350.</p> | <p>Time trends;adolescence;mental health;birth cohorts;UK</p> <p>Background: Existing evidence points to a substantial rise in psychosocial disorders affecting young people over the past 50 years (Rutter & Smith, 1995). However, there are major methodological challenges in providing conclusive answers about secular changes in disorder. Comparisons of rates of disorder at different time points are often affected by changes in diagnostic criteria, differences in assessment methods, and changes in official reporting practices. Few studies have examined this issue using the same instruments at each time point.</p> <p>Methods: The current study assessed the extent to which conduct, hyperactive and emotional problems have become more common over a 25-year period in three general population samples of UK adolescents. The samples used in this study were the adolescent sweeps of the National Child Development Study and the 1970 Birth Cohort Study, and the 1999 British Child and Adolescent Mental Health Survey. Comparable questionnaires were completed by parents of 15–16-year-olds at each time point (1974, 1986, and 1999).</p> <p>Results and conclusions: Results showed a substantial increase in adolescent conduct problems over the 25-year study period that has affected males and females, all social classes and all family types. There was also evidence for a recent rise in emotional problems, but mixed evidence in relation to rates of hyperactive behaviour. Further analyses using longitudinal data from the first two cohorts showed that long-term outcomes for adolescents with conduct problems were closely similar. This provided evidence that observed trends were unaffected by possible changes in reporting thresholds.</p> |
| <p>COOKSEY, E, JOSHI, H and VERROPOULOU, G. (2009) Does mothers' employment affect children's development? Evidence from the children of the British 1970 Birth Cohort and the American NLSY79. <i>Longitudinal and Life Course Studies</i>, 1(1), 95-115.</p> | <p>Background: The increasing employment of mothers of young children in the UK and the USA is believed to affect children adversely. Maternity leave and part-time employment, more common in the UK than the US, are possible offsets.</p> <p>Methods: This paper analyses the cognitive and behavioural development of school aged children by maternal employment before the child's first birthday. Data come from the second generation of two cohort studies: the 1970 British Birth Cohort Study (BCS70) and the US 1979 National Longitudinal Study of Youth Child (NLSY79). Both contain several outcomes per child, in some cases several children per mother. The hierarchical structure is tackled by multi-level modelling. The BCS70 provides data back to birth for the mothers we study, and the NLSY79 started collecting data from mothers in their early to mid teens, thus supplying a good array of controls for confounding variables (such as maternal education and ability, family history) which may affect labour market participation.</p> <p>Results: Similar to other studies, results are mixed and modest. Only two out of five US estimates of maternal employment in the child's first year have a significant (0.05 level) coefficient on child development – negative for reading comprehension,</p> |

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| | <p>positive for freedom from internalized behaviour problems. None of the estimates were significant for four child outcomes modelled in Britain.</p> <p>Conclusions: There is little evidence of harm to school-age children from maternal employment during a child's infancy, especially if employment is part-time, and in a context where several months of maternity leave is the norm.</p> |
| <p>DAS-MUNSHI, J , CLARK, C , DEWEY, M.E, LEAVEY, G, STANSFELD, S and PRINCE, M.J. (2011) Born into adversity; The intergenerational transmission of psychological morbidity in second generation Irish children living in Britain. Journal of Epidemiology and Community Health, 65, A31-A32.</p> | <p>Objective Despite relative improvements in socioeconomic position across generations, Irish people living in Britain continue to suffer from excess psychological morbidity. This study will aim to elucidate factors relating to the intergenerational transmission of psychological morbidity.</p> <p>Method Data from two birth cohorts; the 1958 National Child Development Survey (NCDS) and the 1970 British Birth Cohort (BCS70) were used. Both surveyed 17,000 babies born in a single week in 1958 and 1970. 5% of each cohort comprised second-generation Irish children. Data from ages 7, 11, and 16 in the NCDS, and ages 5, 10 and 16 in BCS70, were used to assess childhood adversity and psychological morbidity, as well as mental and physical health of Irish-born parents.</p> <p>Results In both cohorts, second generation Irish children were more likely to be born into and brought up under circumstances of marked material hardship. Relative to children without a parental history of migration, second generation Irish children born in 1958 had greater emotional and behavioural problems at ages 7, 11 and 16, while Irish children born in 1970 had greater emotional and behavioural problems at age 16. All mental health differences were fully accounted for through material adversity indicators. In NCDS, Irish-born parents were more likely to report a chronic health problem relative to non-Irish parents (OR: 1.29; 95% CI: 1.08 to 1.54; p=0.005). In BCS70 Irish-born mothers were 1.39 times more likely to have a common mental disorder when their children were aged five (95% CI: 1.15 to 1.69; p<0.001). The excess risk of mental or chronic health problems in Irish-born parents disappeared when material adversity was taken into account. Maternal common mental disorders fully mediated psychological morbidity in second generation Irish children, whereas parental chronic health problems partially mediated differences.</p> <p>Conclusion Childhood mental health problems in second generation Irish children growing up in Britain are accounted for through the adverse social circumstances which they were born into. As childhood mental health is implicated in the aetiology of adult common mental disorders, the findings suggest important life-course mechanisms in the aetiology of adult mental health in second generation Irish people.</p> |
| <p>DREGAN, A , BROWN, J and ARMSTRONG, D. (2011a) Do adult emotional and behavioural outcomes vary as a function of diverse childhood experiences of the public care system? Psychological Medicine, 41(10), 2213-2220 .</p> | <p>Background Longitudinal data from the 1970 British Cohort Study were used to examine the long-term adult outcomes of those who, as children, were placed in public care. Method Multivariate logistic estimation models were used to determine whether public care and placement patterns were associated with adult psychosocial outcomes. Seven emotional and behavioural outcomes measured at age 30 years were considered: depression, life dissatisfaction, self-efficacy, alcohol problems, smoking, drug abuse, and criminal convictions. Results The analyses revealed a significant association between public care status and adult maladjustment on depression [odds ratio (OR) 1.74], life dissatisfaction (OR 1.45), low self-efficacy (OR 1.95), smoking (OR 1.70) and criminal convictions (OR 2.13). Conclusions Overall, the present study findings suggest that there are enduring influences of a childhood admission to public care on emotional and behavioural adjustment from birth to adulthood. Some of the associations with childhood public care were relatively strong, particularly with respect to depression, self-efficacy and criminal convictions.</p> |

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| <p>DREGAN, A, GULLIFORD, M and ARMSTRONG, D. (2011b) Adult psychosocial outcomes of childhood public care: a life course perspective using the BCS70 cohort study. <i>Journal of Epidemiology and Community Health</i>, 65(Suppl.1), A104.</p> | <p>Objectives The extent to which differences in childhood experiences of public care are related to adult psychosocial outcomes is unknown. This study aimed to estimate associations between childhood experiences of the public care system with emotional and behavioural traits at age 30 years.</p> <p>Methods Participants included 10 895 respondents at the age 30 survey of the 1970 British Cohort Study (BCS70) who were not adopted and whose care history was known. Two estimation models were employed to determine whether public care and placement patterns were associated with adult psychosocial outcomes. Analyses were adjusted for individual, parental and family characteristics in childhood.</p> <p>Results Cohort members with a public care experience reported lower childhood family socio-economic compared to those in the no public care group. After adjusting for confounding, exposure to both foster and residential care, longer placements and multiple placements were associated with more extensive adult emotional and behavioural difficulties. Specifically, residential care was associated with adult criminal convictions (OR 3.09, 95% CI 2.10 to 4.55) and adult depression (1.81, 1.23 to 2.68) compared to no public care placement. Multiple placements were associated with low self-efficacy in adulthood (3.57, 2.29 to 5.56). Admission to care after the age of 10 was associated adult criminal convictions (6.03, 3.34 to 10.90) and smoking (3.32, 1.97 to 5.58).</p> <p>Conclusion Children who experience public care have impaired well-being as adults. Older age at admission, multiple care placements and residential care are associated with worse outcomes.</p> |
| <p>DREGAN, A and GULLIFORD, M.C. (2012) Foster care, residential care and public care placement patterns are associated with adult life trajectories: population-based cohort study. <i>Social Psychiatry and Psychiatric Epidemiology</i>, 47(9), 1517-1526.</p> | <p>Objectives Childhood experiences of public care may be associated with adult psychosocial outcomes. This study aimed to evaluate the associations of four public care exposures: type of placement, length of placement, age at admission to care and number of placements, as well as the reasons for admission to public care with emotional and behavioural traits at age 30 years.</p> <p>Methods Participants included 10,895 respondents at the age 30 survey of the 1970 British Cohort Study (BCS70) who were not adopted and whose care history was known. Analyses were adjusted for individual, parental and family characteristics in childhood.</p> <p>Results Cohort members with a public care experience presented lower childhood family socio-economic status compared with those in the no public care group. After adjusting for confounding, exposure to both foster and residential care, longer placements and multiple placements were associated with more extensive adult emotional and behavioural difficulties. Specifically, residential care was associated with increased risk of adult criminal convictions (OR = 3.09, 95% CI: 2.10–4.55) and depression (1.81, 1.23–2.68). Multiple placements were associated with low self-efficacy in adulthood (OR = 3.57, 95% CI: 2.29, 5.56). Admission to care after the age of 10 was associated with increased adult criminal convictions (OR = 6.03, 95% CI: 3.34–10.90) and smoking (OR = 3.32, 95% CI: 1.97–5.58).</p> <p>Conclusion Adult outcomes of childhood public care reflect differences in children's experience of public care. Older age at admission, multiple care placements and residential care may be associated with worse outcomes.</p> |

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| <p>DUNN, K.M. (2010) Extending conceptual frameworks: life course epidemiology for the study of back pain. <i>BMC Musculoskeletal Disorders</i>, 11, 23.</p> <p>[not sure that this is in the right section]</p> | <p>Epidemiological studies have identified important causal and prognostic factors for back pain, but these frequently only identify a proportion of the variance, and new factors add little to these models. Recently, interest has increased in studying diseases over the life course, stimulated by the 1997 book by Kuh and Ben-Shlomo, a move accompanied by important conceptual and methodological developments. This has resulted in improvements in the understanding of other conditions like cardiovascular and respiratory disease. This paper aims to examine how conceptual frameworks from life course epidemiology could enhance back pain research.</p> <p>Discussion</p> <p>Life course concepts can be divided into three categories. Concept 1: patterns over time, risk chains and accumulation. Simple 'chains of risk' have been studied - e.g. depression leading to back pain - but studies involving more risk factors in the chain are infrequent. Also, we have not examined how risk accumulation influences outcome, e.g. whether multiple episodes or duration of depression, throughout the life course, better predicts back pain. One-year back pain trajectories have been described, and show advantages for studying back pain, but there are few descriptions of longer-term patterns with associated transitions and turning points. Concept 2: influences and determinants of pathways. Analyses in back pain studies commonly adjust associations for potential confounders, but specific analysis of factors modifying risk, or related to the resilience or susceptibility to back pain, are rarely studied. Concept 3: timing of risk. Studies of critical or sensitive periods - crucial times of life which influence health later in life - are scarce in back pain research. Such analyses could help identify factors that influence the experience of pain throughout the life course.</p> <p>Summary</p> <p>Back pain researchers could usefully develop hypotheses and models of how risks from different stages of life might interact and influence the onset, persistence and prognosis of back pain throughout the life course. Adoption of concepts and methods from life course epidemiology could facilitate this.</p> |
| <p>FEINSTEIN, L. (2002) Quantitative Estimates of the Social Benefits of Learning, 2: Health (Depression and Obesity). <i>Wider Benefits of Learning Research Report No 6</i>. London: Centre for Research on the Wider Benefits of Learning, Institute of Education.</p> | <p>In this report, information from the latest sweeps of the UK national cohorts is used to estimate the magnitude of the effects of learning on depression and obesity. The estimated effects of education have then been linked to studies of the social costs of ill health, in order to make progress in the task of evaluating the health benefits of learning.</p> <p>Findings show that the sizable differences in health observed for those with different levels of education are partially due to the effects of education and are not due solely to differences that precede or explain education. Moreover, these differences in health outcomes are important from a perspective of public finance as well as in terms of equity and wider social well-being.</p> |
| <p>FLOURI, E. (2004) The role of maternal authoritarianism in early childhood in mental health at age 30: findings from the 1970 British birth cohort. <i>Acta Psychiatrica Scandinavica</i>, 110(s421), 35-56.</p> | |

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| <p>FLOURI, E. (2005) <i>Fathering and Child Outcomes</i>. Chichester: Wiley.</p> | <p>Over the last twenty years it has become recognized that fathers play a crucial role in child development and subsequent adult status and behaviour. This book presents the state-of-the-art on fathering and its determinants. Based on original research into the effects that different styles of fathering can have on children, it explores the long and short terms outcomes of involved fathering on different domains of children's lives, including academic achievement, mental health, socio-economic status, adolescent relationships and delinquency.</p> |
| <p>FLOURI, E. (2007) Early family environments may moderate prediction of low educational attainment in adulthood: The cases of childhood hyperactivity and authoritarian parenting. <i>Educational Psychology</i>, 27(6), 737-751.</p> | <p>Using longitudinal data from the 1970 British Cohort Study, this study explored conditions under which the effects of risk factors for low educational attainment might be moderated. Two different risk factors, hyperactivity and maternal authoritarian parenting attitudes, were studied. The results showed that on the whole these two risk factors were negatively related to educational attainment at age 26. However, mother's authoritarian parenting was not related to educational attainment in children raised in low-resource (e.g., low social class) environments. Analogously, hyperactivity was less strongly associated with low educational attainment in children raised in low-stimulation (e.g., maternal depression and low maternal educational attainment) environments. The implications of these findings for intervention programs are discussed.</p> |
| <p>FLOURI, E and MALMBERG, L. (2011) Gender differences in the effects of childhood psychopathology and maternal distress on mental health in adult life. <i>Social Psychiatry and Psychiatric Epidemiology</i>, 46(7), 533-542.</p> | <p>To investigate gender differences in how emotional and behavioural problems (hyperactivity, emotional problems, and conduct problems) and maternal psychological distress, all measured at three time points in childhood (ages 5, 10, and 16), predict psychological distress in adult life (age 30).</p> <p>Methods Longitudinal data from 10,444 cohort members of the 1970 British Cohort Study (BCS70) were used.</p> <p>Results Emotional problems in adolescence tended to be more strongly associated with adult psychological distress in men than in women. No gender differences in the association of adult psychological distress with maternal psychological distress in adolescence were found. In childhood and adolescence boys' externalizing behaviour problems tended to show more homotypic continuity than girls', but all heterotypic continuity (although very little) of behaviour problems was seen in girls. Maternal psychological distress in childhood tended to have a stronger effect on girls' than boys' emotional problems in adolescence.</p> <p>Conclusions In general there was little evidence for gender differences either in the association of adult psychological distress with adolescent psychopathology or in the association of adult psychological distress with maternal psychological distress in adolescence. The continuity of emotional problems from childhood to adolescence to adult life was strong and similar for both sexes.</p> |

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| <p>GALE, C. R and MARTYN, C. N. (2004) Birth weight and later risk of depression in a national birth cohort. <i>British Journal of Psychiatry</i>, 184(1), 28-33.</p> | <p>Background Low birth weight increases the risk of childhood behavioural problems, but it is not clear whether poor foetal growth has a long-term influence on susceptibility to depression.</p> <p>Aims To examine the relation between birth weight and risk of psychological distress and depression.</p> <p>Method At age 16 years 5187 participants in the 1970 British Cohort Study completed the 12-item General Health Questionnaire to assess psychological distress. At age 26 years 8292 participants completed the Malaise Inventory to assess depression and provided information about a history of depression.</p> <p>Results Women whose birth weight was ≤ 3 kg had an increased risk of depression at age 26 years (OR=1.3; 95% CI 1.0–1.5) compared with those who weighed >3.5 kg. Birth weight was not associated with a reported history of depression or with risk of psychological distress at age 16 years. In men there were no associations between any measurement and the full range of birth weight but, compared with men of normal birth weight, those born weighing ≤ 2.5 kg were more likely to be psychologically distressed at age 16 years (OR=1.6, 95% CI 1.1–2.5) and to report a history of depression at age 26 years (OR=1.6, 95% CI 1.1–2.3).</p> <p>Conclusions Impaired neurodevelopment during foetal life may increase susceptibility to depression.</p> |
| <p>GALE, C.R, HATCH, S.L, BATTY, G.D and DEARY, I.J. (2009) Intelligence in childhood and risk of psychological distress in adulthood: the 1958 National Child Development Survey and the 1970 British Cohort Study. <i>Intelligence</i>, 37(6), 592-599.</p> | <p>Lower cognitive ability is a risk factor for some forms of severe psychiatric disorder, but it is unclear whether it influences risk of psychological distress due to anxiety or the milder forms of depression. The participants in the present study were members of two British birth national birth cohorts, the 1958 National Child Development Survey (n = 6369) and the 1970 British Cohort Study (n = 6074). We examined the association between general cognitive ability (intelligence) measured at age 10 (1970 cohort) and 11 years (1958 cohort) and high levels of psychological distress at age 30 (1970 cohort) or 33 years (1958 cohort), defined as a score of 7 or more on the Malaise Inventory. In both cohorts, participants with higher intelligence in childhood had a reduced risk of psychological distress. In sex-adjusted analyses, a standard deviation (15 points) increase in IQ score was associated with a 39% reduction in psychological distress in the 1958 cohort and a 23% reduction in the 1970 cohort [odds ratios (95% confidence intervals) were 0.61 (0.56, 0.68) and 0.77 (0.72, 0.83), respectively]. These associations were only slightly attenuated by further adjustment for potential confounding factors in childhood, including birth weight, parental social class, material circumstances, parental death, separation or divorce, and behaviour problems, and for potential mediating factors in adulthood, educational attainment and current social class. Intelligence in childhood is a risk factor for psychological distress due to anxiety and the milder forms of depression in young adults. Understanding the mechanisms underlying this association may help inform methods of prevention.</p> |
| <p>GORE LANGTON, E , COLLISHAW, S , GOODMAN, R , PICKLES, A and MAUGHAN, B. (2011) An emerging income differential for adolescent emotional problems. <i>Journal of Child Psychology and Psychiatry</i>, 52(10), 1081-1088.</p> | <p>Background: While there is considerable evidence of income gradients in child and adolescent behaviour problems, evidence relating to children and young people's emotional difficulties is more mixed. Older studies reported no income differentials, while recent reports suggest that adolescents from low-income families are more likely to experience emotional difficulties than their more affluent peers.</p> <p>Methods: We compared the association between low- versus medium-/high-family income and parent-reported emotional difficulties in 15- and 16-year-olds in three large nationally representative cohorts studied in 1974, 1986 and 1999/2004. We then examined whether increases in the income differential could be accounted for by changes in the association of a range of sociodemographic factors (family type or size, maternal education or housing tenure) with either family income or emotional difficulties. Finally, in the most recent cohorts, we considered whether the effects of these sociodemographic</p> |

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| | <p>variables were mediated by more proximal family factors (maternal distress, stressful life events or family dysfunction). Results: An increasing income differential in adolescent emotional problems emerged over the period, with standardized coefficients for associations with low income increasing from .07 in 1974 and 1986 to .30 in 1999/2004. This was due partially (~10%) to sociodemographic risk factors for emotional difficulties becoming more strongly associated with low-income families over time, and partially (~40%) to the increasing impact of these risk factors. In the most recent cohorts, about 40% of the effects of sociodemographic risks appear to have been mediated by more proximal family factors. Conclusions: These findings have implications for our understanding of the health burden of emotional problems, recognition of the health burden associated with inequality and public concern about the consequences of social change.</p> |
| HAGELL, A. (2012) Changing Adolescence: social trends and mental health. Bristol: Policy Press. | <p>The general well-being of British adolescents has been the topic of considerable debate in recent years, but too often this is based on myth rather than fact. Are today's young people more stressed, anxious, distressed or antisocial than they used to be? What does research evidence tell us about the adolescent experience today and how it has changed over time? And how do trends in adolescent well-being since the 1970s relate to changes in education, leisure, communities and family life in that time? This unique volume brings together the main findings from the Nuffield Foundation's Changing Adolescence Programme and explores how social change may affect young people's behaviour, mental health and transitions toward adulthood. As well as critiquing research evidence, which will be of interest to a wide academic audience, the book will inform the wider debate on this subject among policy makers and service providers, voluntary organisations and campaign groups.</p> |
| JOHNSTON, D.W, SCHURER, S and SHIELDS, M.A. (2011) Evidence on the Long Shadow of Poor Mental Health across Three Generations. IZA Discussion Paper No. 6014. Bonn: IZA. | <p>Individuals suffering from mental health problems are often severely limited in their social and economic functioning. Mental health problems can develop early in life, are frequently chronic in nature, and have an established hereditary component. The extent to which mental illness runs in families could therefore help explain the widely discussed intergenerational transmission of socioeconomic disadvantage. Using data from three generations contained in the 1970 British Cohort Study, we estimate the intergenerational correlation of mental health between mothers, their children, and their grandchildren. We find that the intergenerational correlation in mental health is about 0.2, and that the probability of feeling depressed is 63 percent higher for children whose mothers reported the same symptom 20 years earlier. Moreover, grandmother and grandchild mental health are strongly correlated, but this relationship appears to work fully through the mental health of the parent. Using grandmother mental health as an instrument for maternal mental health in a model of grandchild mental health confirms the strong intergenerational correlation. We also find that maternal and own mental health are strong predictors of adulthood socioeconomic outcomes. Even after controlling for parental socioeconomic status, own educational attainment, and own mental health (captured in childhood and adulthood), our results suggest that a one standard deviation reduction in maternal mental health reduces household income for their adult offspring by around 2 percent.</p> |
| MATEI, V and UDREA, C. (2011) Gestational length, birthweight, and later risk for depression. Romanian Journal of Psychiatry, 2011, 3. | <p>Background: There is already numerous data in literature suggesting an association between low birth weight, shorter gestational age and increased risk for later depression but the results of these studies are mixed. An association between these factors may be mediated by increased exposure to corticotrophin releasing hormone. Objective: The objective of this study is to assess correlations between low birth weight, shorter gestational age and later risk for depression in adulthood (at 26 years). Methods: This study builds on the 1970 British Cohort Study (BCS70). Data was collected at birth and age 26. Results: By using the chi-square method to compare the group of people with early gestational age with the group of people</p> |

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| | <p>with normal gestational age, there is an increased risk for later depression in people with an early gestational age ($p=0.047$) with $OR=1.760$. The risk remains statistically significant ($p=0.042$) after controlling (logistic regression) for potential confounders (birth weight, parental socio-economic status and childhood cognitive functioning) with $OR = 1.885$. There are statistical significant ($p=0.002$) differences between people who would later develop depression and people who did not, with the former having lower birth weight (t-test).</p> <p>However, after controlling using logistic regression for gestational length and the potential confounders, no statistically significant relationship between low birth weight and later depression was found.</p> <p>Conclusions: Shorter gestational age may represent a risk factor for later depression while low birth weight does not represent a risk.</p> |
| <p>MENSAH, F. K and HOBBCRAFT J. (2008) Childhood deprivation, health and development: associations with adult health in the 1958 and 1970 British prospective birth cohort studies. <i>Journal of Epidemiology and Community Health</i>, 62(7), 599-606.</p> | <p>Objective: To examine the associations between childhood socioeconomic and family circumstances, health and behavioural and cognitive development, and health and mental well-being outcomes in adulthood; exploring whether associations are different for cohorts born in 1958 and 1970, or for men and women.</p> <p>Design: Pooled analysis of two prospective, population-based, British birth cohort studies.</p> <p>Participants: 11 327 men and women born in 1958 and 11 177 men and women born in 1970 who responded in the adult follow-up investigations at ages 33 and 30 respectively.</p> <p>Main outcome measures: Self-rated general health, Rutter malaise scale indicating mental well-being, and presence of a long-standing illness limiting daily activities; assessed at ages 33 and 30 for the 1958 and 1970 birth cohorts respectively.</p> <p>Results: A diversity of family background (socioeconomic deprivation, housing tenure, family disruption and parental interest), health and development (cognition and behaviour) measures each provided powerful independent indications for general health and mental well-being. Indications for limiting long-standing illness in adulthood were focused most strongly upon health difficulties in childhood. Few interactions between either birth cohort or gender and childhood measures were observed, and excepting these interactions consistency in associations between the childhood measures and the outcomes by gender and cohort was observable.</p> <p>Conclusions: This study emphasises the importance of cognitive and behavioural development in childhood, as well as deprivation, family background and childhood health in indicating future adult health and mental well-being, emphasising time-persistent effects and important indications for men and women.</p> |
| <p>MONTGOMERY, S, EHLIN, A and SACKER, A. (2006) Breast feeding and resilience against psychosocial stress. <i>Archives of Disease in Childhood</i>, 91(12), 990-994.</p> | <p>Background: Some early life exposures may result in a well controlled stress response, which can reduce stress related anxiety. Breast feeding may be a marker of some relevant exposures.</p> <p>Aims: To assess whether breast feeding is associated with modification of the relation between parental divorce and anxiety.</p> <p>Methods: Observational study using longitudinal birth cohort data. Linear regression was used to assess whether breast feeding modifies the association of parental divorce/separation with anxiety using stratification and interaction testing. Data were obtained from the 1970 British Cohort Study, which is following the lives of those born in one week in 1970 and living in Great Britain. This study uses information collected at birth and at ages 5 and 10 years for 8958 subjects. Class teachers answered a question on anxiety among 10 year olds using an analogue scale (range 0–50) that was log transformed to minimise skewness.</p> <p>Results: Among 5672 non-breast fed subjects, parental divorce/separation was associated with a statistically significantly</p> |

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| | <p>raised risk of anxiety, with a regression coefficient (95% CI) of 9.4 (6.1 to 12.8). Among the breast fed group this association was much lower: 2.2 (–2.6 to 7.0). Interaction testing confirmed statistically significant effect modification by breast feeding, independent of simultaneous adjustment for multiple potential confounding factors, producing an interaction coefficient of –7.0 (–12.8 to –1.2), indicating a 7% reduction in anxiety after adjustment.</p> <p>Conclusions: Breast feeding is associated with resilience against the psychosocial stress linked with parental divorce/separation. This could be because breast feeding is a marker of exposures related to maternal characteristics and parent–child interaction.</p> |
| <p>MORGAN, Z, BRUGHA, T, FRYERS, T and STEWART-BROWN, S. (2012) The effects of parent–child relationships on later life mental health status in two national birth cohorts. <i>Social Psychiatry and Psychiatric Epidemiology</i>, 47(11), 1707-1715.</p> | <p>Abusive and neglectful parenting is an established determinant of adult mental illness, but longitudinal studies of the impact of less severe problems with parenting have yielded inconsistent findings. In the face of growing interest in mental health promotion, it is important to establish the impact of this potentially remediable risk factor.</p> <p>Methods</p> <p>Participants: 8,405 participants in the 1958 UK birth cohort study, and 5,058 in the 1970 birth cohort study Exposures: questionnaires relating to the quality of relationships with parents completed at age 16 years. Outcomes: 12-item General Health Questionnaire and the Malaise Inventory collected at age 42 years (1958 cohort) and 30 years (1970 cohort). Statistical methodology: logistic regression analyses adjusting for sex, social class and teenage mental health problems.</p> <p>Results</p> <p>1958 cohort: relationships with both mother and father predicted mental health problems in adulthood; increasingly poor relationships were associated with increasing mental health problems at age 42 years. 1970 cohort: positive items derived from the Parental Bonding Instrument predicted reduced risk of mental health problems; negative aspects predicted increased risk at age 30 years. Odds of mental health problems were increased between 20 and 80% in fully adjusted models.</p> <p>Conclusions</p> <p>Results support the hypothesis that problems with parent–child relationships that fall short of abuse and neglect play a part in determining adult mental health and suggest that interventions to support parenting now being implemented in many parts of the Western world may reduce the prevalence of mental illness in adulthood.</p> |
| <p>MURASKO, J. E. (2007) A lifecourse study on education and health: The relationship between childhood psychosocial resources and outcomes in adolescence and young adulthood. <i>Social Science Research</i>, 36(4), 1348-1370.</p> | <p>Lifecourse models have been popular in several disciplines as a way to study health. Such models view health as the product of long-term influences that begin in early-life and continue their direct and indirect effects over time, beginning in gestation and following through childhood, adolescence, adulthood, and late-life. This paper uses a lifecourse framework to examine the effects of childhood psychosocial development on young adult health and education outcomes, with special interest paid to potential pathway effects of health and education outcomes in adolescence. Child psychosocial development is measured by constructs of locus of control and self-esteem. Both locus of control and self-esteem exhibit significant yet modest associations with young adult health, net of adolescent outcomes. Only locus of control is significantly associated with education outcomes. These results are discussed in the context of previous lifecourse research and implications for policy.</p> |
| <p>OSBORN, A.F. (1989) Maternal</p> | <p>**no link</p> |

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| Employment, Depression & Child Development. Bristol: Institute of Child Health, University of Bristol. | |
| OSBORN, A.F. (1990) Resilient Children: A longitudinal study of high achieving socially disadvantage children. Early Child Development and Care, 62(1), 23-47. | Current interest in “resilient” children, those who are vulnerable to psycho-pathology yet achieve competence, prompted a study of such children using data from the 1970 British birth cohort. The conceptual framework used to define a sample of “resilient” children within the cohort is described, and results from analyses designed to identify contextual, parenting and experiential factors which substantially increased the chance of resilience in vulnerable children are presented. Vulnerability was defined in terms of the family's socio-economic status when the child was 5, and a Competency Index, based on cognitive educational attainment and behavioural adjustment at 10 years, determined which of the vulnerable group were “resilient”. The main finding was that having positive, supportive and interested parents was a major factor which enabled socially vulnerable children to achieve competence. Maternal depression, a condition to which low SES mothers were at high risk, substantially reduced the chance of resilience. |
| OSBORN, A.F. (1984) Maternal employment, depression and child behaviour. Equal Opportunities Commission Research Bulletin, 8, 48-67. | **no link |
| PARSONS, S and BYNNER, J. (2006) Does numeracy matter more? London: National Research and Development Centre for Adult Literacy and Numeracy. | Most people recognise that a low level of literacy skill can make it difficult to function effectively in adult life, but it is often assumed that numeracy (i.e. being able to deal competently with numbers, tables and graphs) is less important than literacy. This study was designed to test whether this is in fact the case. It found that men with poor numeracy, irrespective of their standard of literacy, were more at risk of depression (as measured by the Malaise inventory) and women with poor numeracy, irrespective of their standard of literacy, were more likely to have low self-esteem and more likely to feel they lacked control over their lives. |
| STEPTOE, A and BUTLER, N.R. (1996) Sports participation and emotional well-being in adolescents. Lancet, 347(9018), 1789-1792. | Background Regular physical activity may have psychological benefits. Our study assessed the association between extent of participation in regular sport or vigorous recreational activity and emotional wellbeing in adolescents aged 16 years. Methods Data were collected from a cohort of adolescents, born between April 5 and April 11, 1970, in England, Scotland, and Wales, who took part in the follow-up assessment at age 16 years. Emotional wellbeing was assessed by the general health questionnaire (GHQ) and the malaise inventory (divided into psychological and somatic subscales). Information was obtained about participation in ten team and 25 individual sports and vigorous recreational activities during the previous year. Non-vigorous recreations, such as darts and snooker, were assessed separately. Social class and health status (recent illness and use of hospital services) were included in our analyses as possible confounding factors. 2223 boys and 2838 girls with a mean age of 16.3 years (SD 0.38) were included in our analysis. Statistical analysis was by multiple linear and logistic regression. Findings The sport and vigorous recreational activity index was positively associated with emotional wellbeing independently of sex, social class, health status, and use of hospital services. These associations were significant for the psychological symptom subscale of the malaise inventory (regression coefficient -0.024, 95% CI -0.036 to -0.011, p<0.001) and the GHQ (odds ratio of emotional distress per unit increase in vigorous physical activity 0.992, 95% CI 0.985-0.998, p<0.01). By contrast, participation in non-vigorous activities was associated with high psychological and somatic symptoms on the malaise inventory. Interpretation We conclude that emotional wellbeing is positively associated with extent of |

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| | <p>participation in sport and vigorous recreational activity among adolescents. Although causal associations cannot be assumed in this cross-sectional analysis, our results are consistent with experimental evidence that vigorous exercise has favourable effects on emotional state.</p> |
| <p>STEWART-BROWN, S.L, FLETCHER, L and WADSWORTH, M.E.J. (2005) Parent-child relationships and health problems in adulthood in three national cohort studies. <i>European Journal of Public Health</i>, 15(6), 640-646.</p> | <p>Background: Event-based measures suggest that emotional adversity in childhood has a long-term health impact, but less attention has been paid to chronic emotional stressors such as family conflict, harsh discipline or lack of affection. This study aimed to assess the impact of the latter on health problems and illness in adulthood. Methods: Logistic regression and multinomial logistic regression analyses of data collected in three UK national birth cohort studies at ages 43 and 16 years covering subjective report of relationship quality from the 'child', and number of health problems and illnesses reported in adulthood at ages 43, 33 and 26 years adjusted for social class, sex and, in 1946 and 1970 cohorts, for symptoms of mental illness. Results: Reports of abuse and neglect (1946 cohort), poor quality relationship with mother and father (1958 cohort), and a range of negative relationship descriptors (1970 cohort) predicted reports of three or more illnesses or health problems in adulthood. Results were inconsistent with respect to one or two illnesses or health problems. Adjustment for sex, social class and poor mental health attenuated the odds of poor health, but measures of relationship quality retained a significant independent effect. Conclusions: Poor quality parent-child relationships could be a remediable risk factor for poor health in adulthood.</p> |
| <p>THOMPSON, L, KEMP, J, WILSON, P, PRITCHETT, R, MINNIS, H, TOMS-WHITTLE, L, PUCKERING, C, LAW, J and GILLBERG, C. (2010) What have birth cohort studies asked about genetic, pre- and perinatal exposures and child and adolescent onset mental health outcomes? A systematic review. <i>European Child and Adolescent Psychiatry</i>, 19(1), 1-15.</p> | <p>Increased understanding of early neurobehavioural development is needed to prevent, identify, and treat childhood psychopathology most effectively at the earliest possible stage. Prospective birth cohorts can elucidate the association of genes, environment, and their interactions with neurobehavioural development. We conducted a systematic review of the birth cohort literature. On the basis of internet searches and 6,248 peer-reviewed references, 105 longitudinal epidemiological studies were identified. Twenty studies met inclusion criteria (prospectively recruited, population-based cohort studies, including at least one assessment before the end of the perinatal period and at least one assessment of behaviour, temperament/personality, neuropsychiatric or psychiatric status before 19 years of age), and their methodologies were reviewed in full. Whilst the birth cohort studies did examine some aspects of behaviour and neurodevelopment, observations in the early months and years were rare. Furthermore, aspects of sampling method, sample size, data collection, design, and breadth and depth of measurement in some studies made research questions about neurodevelopment difficult to answer. Existing birth cohort studies have yielded limited information on how pre- and perinatal factors and early neurodevelopment relate to child psychopathology. Further epidemiological research is required with a specific focus on early neurodevelopment. Studies are needed which include the measures of early childhood psychopathology and involve long-term follow-up.</p> |
| <p>THORPE, K, GOLDING, J, MACGILLIVRAY, I and GREENWOOD, R. (1991) Comparison of prevalence of depression in mothers of twins and mothers of singletons. <i>British Medical Journal</i>, 302(6781), 875-878.</p> | <p>OBJECTIVE--To determine whether the apparent additional and exceptional stresses associated with bearing and parenting twins affect the emotional wellbeing of mothers. SETTING--Great Britain, 1970-5. DESIGN--Cohort study of 13,135 children born between 4 April and 11 April 1970. Mothers of all children, both singletons and twins, were interviewed by health visitors (providing demographic data) and completed a self report measure of emotional well-being (the Rutter malaise inventory) when the child was 5 years of age. The malaise scores of mothers of twins were compared with those of all mothers of singletons and then with those of mothers categorised by the age spacing of their children (only one child, widely spaced, or</p> |

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| | <p>closely spaced), taking account of maternal age, social class, and whether the study child had a disability, by using logistic regression. SUBJECTS--139 mothers of twins--122 pairs of twins and 17 twins whose co-twin had died--and 12,573 controls, who were mothers of singletons. RESULTS--A significantly higher proportion of mothers of twins at 5 years had malaise scores indicative of depression than mothers of singletons at the same age. Mothers who had borne twins, one of whom had subsequently died, had the highest malaise scores and were three times more likely than mothers of singletons to experience depression. Both mothers of twin pairs and mothers of singletons closely spaced in age were at significantly higher risk of experiencing depression than mothers of children widely spaced in age or mothers of only one child (p less than 0.0001). Odds ratios indicated that the risk of depression in mothers of twins was higher than that in mothers of closely spaced singletons. CONCLUSION--Mothers of twins are more likely to experience depression. This suggests a relation between the additional and exceptional stresses that twins present and the mother's emotional wellbeing.</p> |
| RISK FACTORS FOR MORTALITY | |
| <p>BARKER, D.J.P, OSMOND, C and GOLDING, J. (1990) Height and mortality in the countries of England and Wales. <i>Annals of Human Biology</i>, 17(1), 1-6.</p> | <p>Average heights of adults and children in the counties of England and Wales were examined using national samples of people born between 1920 and 1970. Although height increased over this 50-year period the differences between counties persisted. Average height in a county is closely related to its pattern of death rates, which were derived from all deaths during 1968-78. Counties with taller populations have lower mortality from chronic bronchitis, rheumatic heart disease, ischaemic heart disease and stroke, and higher mortality from three hormone-related cancers, of the breast, prostate and ovary. The inverse relation of height with bronchitis and cardiovascular disease is further evidence of risk factors acting in early childhood. The positive relation between height and cancers of the breast, ovary and prostate could suggest that promotion of child growth has disadvantages as well as benefits.</p> |
| <p>BARKER, D.J.P, OSMOND, C, GOLDING, J, KUH, D and WADSWORTH, M.E.J. (1989) Growth in utero, blood pressure in childhood and adult life, and mortality from cardiovascular disease. <i>British Medical Journal</i>, 298(6673), 564-567.</p> | <p>In national samples of 9921 10 year olds and 3259 adults in Britain systolic blood pressure was inversely related to birth weight. The association was independent of gestational age and may therefore be attributed to reduced fetal growth. This suggests that the intrauterine environment influences blood pressure during adult life. It is further evidence that the geographical differences in average blood pressure and mortality from cardiovascular disease in Britain partly reflect past differences in the intrauterine environment. Within England and Wales 10 year olds living in areas with high cardiovascular mortality were shorter and had higher resting pulse rates than those living in other areas. Their mothers were also shorter and had higher diastolic blood pressures. This suggests that there are persisting geographical differences in the childhood environment that predispose to differences in cardiovascular mortality.</p> |
| <p>BATTY G. D, DEARY I. J, SCHOON I. and GALE C. R. (2007) Mental ability across childhood in relation to risk factors for premature mortality in adult life: the 1970 British Cohort Study. <i>Journal of Epidemiology and Community Health</i>, 61, 997-1003.</p> | <p>Objective: To examine the relation of scores on tests of mental ability across childhood with established risk factors for premature mortality at the age of 30 years.</p> <p>Methods: A prospective cohort study based on members of the British Cohort Study born in Great Britain in 1970 who had complete data on IQ scores at five (N = 8203) or 10 (N = 8171) years of age and risk factors at age 30 years.</p> <p>Results: In sex-adjusted analyses, higher IQ score at age 10 years was associated with a reduced prevalence of current smoking (OR per 1 SD advantage in IQ 0.84; 95% CI 0.80, 0.88), overweight (0.88; 0.84, 0.92), obesity (0.84; 0.79, 0.92), and hypertension (0.90; 0.83, 0.98), and an increased likelihood of having given up smoking by the age of 30 years (1.25; 1.18,</p> |

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| | <p>1.24). These gradients were attenuated after adjustment for markers of socioeconomic circumstances across the life course, particularly education. There was no apparent relationship between IQ and diabetes. Essentially the same pattern of association was evident when the predictive value of IQ scores at five years of age was examined.</p> <p>Conclusions: The mental ability–risk factor gradients reported in the present study may offer some insights into the apparent link between low pre-adult mental ability and premature mortality.</p> |
| GOLDING, J, HENRIQUES, J and THOMAS, P. (1986) Unmarried at delivery. II: Perinatal Morbidity and Mortality. <i>Early Human Development</i> , 14(3-4), 217-227. | The British Birth Survey included 98% of all deliveries in Great Britain in one week of April 1970. For this report, singleton births to 934 Single (never-married), 301 Once-married (widowed, separated or divorced) and 15 225 Married mothers were compared. After allowing for maternal age, parity and smoking history, there was still a reduction in birth weight in the two unmarried groups, which was mainly associated with pre-term gestation rather than growth retardation. Perinatal mortality was considerably elevated, especially for the Once-married. The excess mortality was mainly among the 'Macerated normally formed stillbirths' and 'Asphyxia' categories of the Wigglesworth classification. |
| GOLDING, J and PETERS, T.J. (1988) Are hospital confinements really more dangerous for the fetus? <i>Early Human Development</i> , 17, 29-36. | <p>A large number of publications has reiterated the observation that perinatal mortality rates in Britain are higher among births in consultant units than among those occurring at home or in other units. In this paper we show that whereas these observations are themselves undeniable, the conclusion that hospital confinements are more dangerous to the fetus is probably erroneous.</p> <p>To illustrate the methodological difficulties, we have used as much information as possible on the delivery intentions for a national survey of 16 668 singleton births taking place in the United Kingdom in one week of April 1970. Using these data, we show that although deliveries in a consultant unit had a three times higher mortality rate than those delivered elsewhere, this was due almost entirely to the excess mortality among transfers of women originally intending to deliver elsewhere. Consideration of the place the mother was originally intending to deliver altered the picture considerably, with mortality only 38% higher among the consultant unit group. It is pointed out that if account was taken of risk factors such as past obstetric history, marital status and social class it is likely that booking for hospital delivery may well carry a lower risk of perinatal death, but that present data collection systems combined with high rates of consultant delivery are unlikely to resolve this question.</p> |
| GENERAL HEALTH AND OTHER OUTCOMES | |
| BARKER, D.J.P, OSMOND, C, GOLDING, J and WADSWORTH, M.E.J. (1988) Acute appendicitis and bathrooms in three samples of British children. <i>British Medical Journal</i> , 296(6627), 956-958. | <p>The occurrence of appendicectomy in three national samples of British children was analysed in relation to household amenities, crowding in the home, and social class. The risk of having the operation depended on the amenities present in the home, in particular whether or not there was a bathroom. This risk was independent of social class.</p> <p>The findings support a relation between acute appendicitis and Western hygiene, which would explain the geographical distribution of the disease and its changing incidence over time. In the developing world, where children grow up in conditions of poor hygiene, there may be outbreaks of appendicitis when housing improves.</p> |

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| BARTLEY, M, SACKER, A and SCHOON, I. (2002) Social and economic trajectories and women's health. In KUH, D and HARDY, R (ed), A lifecourse approach to women's health. Oxford: Oxford University Press. | Unavailable |
| BAUMER, J.H, WADSWORTH, J and TAYLOR, B. (1988). Family recovery after death of a child. Archives of Disease in Childhood, 63(8), 942-47. | Children from a national birth cohort living in families in which a sibling had died or been stillborn were compared with children living in similarly structured families where no such tragedy had occurred by a number of health, developmental, and behavioural outcomes. Surprisingly little ill effect from a sibling death (occurring either before or after the birth of study children) was apparent at the age of 5 years. Families experiencing a stillbirth or death of a child were socially disadvantaged. Even allowing for this and other likely intervening factors, however, a child whose adjacent sibling had died was significantly more liable to bronchitis or wheezing during the first 5 years. Mothers who had experienced the death of a child since the study child's birth had high scores on a psychological screening test, and were more likely to be single parents. Mothers who had lost a child were more likely to smoke during the next pregnancy. No significant differences between cases and control subjects were detected on other health, behavioural, or developmental outcomes. Stillbirth or death of a child appears to have little measurable effect on siblings assessed at 5 years of age. This study does not exclude important longer term psychological effects from sibling death. |
| BLANDEN, J, HANSEN, K and MACHIN, S. (2010) The Economic Cost of Growing Up Poor: Estimating the GDP Loss Associated with Child Poverty. Fiscal Studies, 31(3), 289-311. | One of the motivations for the UK government's target to reduce (and eventually eliminate) child poverty is the perception of a significant long-term economic cost of growing up in poverty. This perception arises from the observation that individuals who experience poverty in their childhood earn less as adults, are less likely to be in employment, are more likely to engage in criminal or anti-social activities and are more likely to experience poor health and lower life satisfaction. This paper quantifies these effects, and expresses them in terms of GDP losses to the nation. We begin by focusing on lost earnings that arise from poorer skills and reduced employment opportunities, and then move on to the wider costs associated with the higher crime rates, poorer health and reduced well-being that are linked with growing up poor. We find a sizeable economic cost, with the cost of growing up in poverty amounting to at least 1 per cent of GDP. |
| BUTLER, N.R. (1980) Child Health and Education in the Seventies: some results on the 5 year follow-up of the 1970 British Birth Cohort. Health Visitor, 53, 81-82. | Unavailable |

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| <p>BUTLER, N.R, GOLDING, J, HASLUM, M and STEWART-BROWN, S. (1982) Recent findings from the 1980 Child Health and Education Study (Section of epidemiology and community medicine meeting held 11 February 1982). Journal of the Royal Society of Medicine, 75(10), 781-784.</p> | <p>The progress is described of the longitudinal cohort study based on all children born in England, Scotland and Wales in one week of April 1970. The children and their mothers have been surveyed at birth, at five, and recently, at ten. Analyses of the data presented include the finding of improved intellectual outcome in children who had been immunized against pertussis, compared with poor intellectual outcome in children who had had hospital admissions for the disease itself. Preliminary data collected at 10 show that routine hearing and vision testing during the child's school life fell short of recommended standards. The major aim of the 10-year-old contact, however, is to establish details of the national prevalence and pathogenesis of disability. The identification of disability uses a life skills questionnaire, medical history and examination.</p> |
| <p>CASE, A and PAXSON, C. (2008) Stature and status: Height, ability, and labor market outcomes. Journal of Political Economy, 116(3), 499-532.</p> | <p>It has long been recognized that taller adults hold jobs of higher status and, on average, earn more than other workers. A large number of hypotheses have been put forward to explain the association between height and earnings. In developed countries, researchers have emphasized factors such as self esteem, social dominance, and discrimination. In this paper, we offer a simpler explanation: On average, taller people earn more because they are smarter. As early as age 3 — before schooling has had a chance to play a role — and throughout childhood, taller children perform significantly better on cognitive tests. The correlation between height in childhood and adulthood is approximately 0.7 for both men and women, so that tall children are much more likely to become tall adults. As adults, taller individuals are more likely to select into higher paying occupations that require more advanced verbal and numerical skills and greater intelligence, for which they earn handsome returns. Using four data sets from the US and the UK, we find that the height premium in adult earnings can be explained by childhood scores on cognitive tests. Furthermore, we show that taller adults select into occupations that have higher cognitive skill requirements and lower physical skill demands.</p> |
| <p>CASE, A and PAXSON, C. (2010) Causes and Consequences of Early Life Health. NBER Working Paper w15637, January 2010</p> | <p>We examine the consequences of childhood health for economic and health outcomes in adulthood, using height as a marker of health in childhood. After reviewing previous evidence, we present a conceptual framework that highlights data limitations and methodological problems associated with the study of this topic. We present estimates of the associations between height and a range of outcomes, including schooling, employment, earnings, health and cognitive ability, using data collected from early to late adulthood on cohort members in five longitudinal data sets. We find height is uniformly associated with better economic, health and cognitive outcomes – a result only partially explained by the higher average educational attainment of taller individuals. We then turn to the NLSY79 Children and Young Adult Survey to better understand what specific aspects of early childhood are captured by height.</p> <p>We find, even among maternal siblings, taller siblings score better on cognitive tests and progress through school more quickly. Part of the differences found between siblings arises from differences in their birth weights and lengths attributable to mother's behaviors while pregnant. Taken together, these results support the hypothesis that childhood health influences health and economic status throughout the life course.</p> |

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| <p>CUTLER, D.M and LLERAS-MUNEY, A. (2010) Understanding differences in health behaviors by education. <i>Journal of Health Economics</i>, 29(1), 1-28.</p> | <p>Using a variety of data sets from two countries, we examine possible explanations for the relationship between education and health behaviors, known as the education gradient. We show that income, health insurance, and family background can account for about 30 percent of the gradient. Knowledge and measures of cognitive ability explain an additional 30 percent. Social networks account for another 10 percent. Our proxies for discounting, risk aversion, or the value of future do not account for any of the education gradient, and neither do personality factors such as a sense of control of oneself or over one's life.</p> |
| <p>ELY, M, WEST, P, SWEETING, H and RICHARDS, M. (2000) Teenage family life, life chances, lifestyles and health: A comparison of two contemporary cohorts. <i>International Journal of Law Policy and the Family</i>, 14, 1-30.</p> | <p>The main aim of this paper is to compare the association of family structure with outcomes for young people in living in the West of Scotland (the Twenty-07 Study, N=1009) with their contemporaries living in Britain (the 1970 British Cohort Study N=11615) in the mid-1980s. A wide range of measures were considered using educational achievement to represent life-chances, smoking and drinking to represent life styles and psychological well-being (GHQ) and physical symptoms to represent health. The associations of family structure with these outcomes is estimated for each Study at three levels: the overall association, that after controlling for gender and family income, and finally after controlling in addition for family processes. Odds ratios with 95 per cent confidence intervals are reported for those living in lone-parent households and reconstituted households each compared with intact families. Similar results are reported for those living in families disrupted by the death of a parent and for those whose parents had separated. No statistically significant differences (at the 5 per cent level) were found between the two studies in the adjusted models. The associations of family structure and reason for family disruption with outcomes for fifteen/sixteen year olds are similar in the West of Scotland to those in Britain as a whole.</p> |
| <p>EMOND, A, GOLDING, J and PECKHAM, C.S. (1989) Cerebral palsy in two national cohort studies. <i>Archives of Disease in Childhood</i>, 64(6), 848-852.</p> | <p>The prevalence of cerebral palsy in the 1958 British Perinatal Mortality Survey and the 1970 British Births Survey remained constant at 2.5/1000 births (40 and 41 cases, respectively). The prevalence at 10 years was higher in the 1970 cohort in which all children with cerebral palsy survived, whereas 22% of the cases in the 1958 cohort died during the first 10 years of life. A case-control study matched three controls for social class, maternal age, parity and marital state, and a further three controls for the infant's sex, gestation, and birth weight. Comparison of cases and controls showed no consistent differences in social and environmental factors, history of pregnancy, labour, or delivery. Important differences were found in the incidence of respiratory and neurological symptoms in the neonatal period. These prospective data derived from two whole populations of births support the hypothesis that most cases of cerebral palsy are not associated with adverse obstetric factors, and confirm that neonatal neurological symptoms are associated with subsequent cerebral palsy.</p> |
| <p>FERTIG, A. (2004) Healthy Baby, Healthy Marriage? The Effects of Children's Health on Divorce. Center for Health and Wellbeing Working Paper. Princeton, NJ: University of Princeton.</p> | <p>Unavailable.</p> |

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| <p>GOLDING, J and PETERS, T.J. (1985) What else do SIDS risk prediction scores predict? Early Human Development, 12(3), 247-260.</p> | <p>Various aspects of the medical and social history of 12,743 children examined at the age of 5 years were related to two risk scores for the sudden infant death syndrome (SIDS) computed from data collected in the neonatal period.</p> <p>Children at high risk of SIDS were also at high risk of pneumonia, non-accidental injury and repeated or prolonged hospital admissions. There were stronger associations, however, with factors indicating social disruption and environmental disadvantage.</p> |
| <p>GOLDING, J and FOGELMAN, K. (1989) Are Britain's children getting healthier? Paediatric Reviews & Communications, 3, 235-245.</p> | <p>Over 90% of children from Britain's second and third national cohort studies enrolled at birth were contacted when they were aged 10-11 and a medical history was taken for 14 000 children born in 1958 and 13 500 of those born in 1970.</p> <p>Health behaviour of the mothers had changed substantially: in the later cohort breast feeding had decreased whereas maternal smoking had increased. More of the later cohort had visited child health clinics.</p> <p>Later born children were more likely to have had eczema, discharging ears, diabetes or a squint but less likely to have had defects on visual testing, or a history of pneumonia, measles or pertussis. The data support the contention that immunisation was responsible for reduction in the prevalence of measles. Children in the later cohort were less likely to have had a tonsillectomy or circumcision but the rates of hernia repair and appendicectomy had stayed static.</p> <p>The most important difference between the two cohorts was found in the variation in school absence due to ill health. The proportion of children who had been absent for prolonged periods had dropped dramatically. The improvement was associated with a number of specific reasons and points to either more effective treatment or changing attitudes towards school attendance.</p> |
| <p>GOLDING, J and FEDRICK, A. (1986) Infant sleeping difficulties and subsequent development. Health Visitor, 59, 245-246.</p> | <p>In this report of further results from the Child Health and Education Study 1970 National Cohort, almost 14 per cent of children were reported as having had sleeping difficulties in early infancy. The major epidemiological finding was that the more children the mother had already had, the less likely she was to report such a history. Half of children with such early problems were still having sleeping difficulties at age five. Contrary to folk belief, infant sleeping difficulties did not predict high intelligence.</p> |
| <p>HENRIQUES, J, GOLDING, J and THOMAS, P. (1986) Unmarried at delivery I: The Mothers and their care. Early Human Development, 14(3-4), 217-228.</p> | <p>Information on 934 never married mothers (Single) were compared with 301 who were widowed, divorced or separated (Once-married) and 15 225 who were married at the time of delivery and were part of the 1970 British Births Survey. Once the maternal age and parity differences had been taken into account the major findings concerned the mothers' health behaviour and the obstetric care they received. Single and Once-married mothers were markedly less likely than the Married group to have used contraceptives in the 18 months before conception, to know accurately the date of the last menstrual period, to commence antenatal care before the third trimester, and to attend antenatal or parentcraft classes. Both groups were more likely to smoke, the Once-married group having an especially high rate of heavy smokers. Single mothers were more likely to be anaemic during pregnancy and the Once-married to have a history of bleeding. Both groups were more likely to be delivered in a consultant unit. Relatively high proportions of Single and Once-married mothers had delivered without any pain relief.</p> |

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| MARMOT, M. (2010) Fair Society, Healthy Lives. Strategic Review of Health Inequalities in Britain Post-2010. London: The Marmot Review. | No abstract. |
| MONTGOMERY, S.M and SCHOON, I. (1997) Health and Health Behaviour. In BYNNER, J, FERRI, E and SHEPHERD, P (ed), Twenty-something in the 1990s. Getting on, getting by, getting nowhere. Aldershot: Dartmouth. | The focus of this book is the study of the lives, past and present, of 9000 adults who were born in the same week of 1970. A generation born in that year has grown up in quite different circumstances from one born even a decade earlier. The 70s and particularly the 80s in Britain were periods of massive social, economic and political transformation. This book follows the lives of the sample tracing the social, educational, political and lifestyle changes that have occurred during this period. |
| MONTGOMERY, S.M, WAKEFIELD, A.J, MORRIS, D.L, POUNDER, R.E and MURCH, S.H. (2000) The initial care of newborn infants and subsequent hayfever. Allergy, 55(10), 916-922. | <p>Background: Patterns of neonatal exposure to microorganisms have changed substantially over the last 100 years, and it has been suggested that this has influenced the risk of immune-mediated disease. Using a proxy measure, we tested the hypothesis that the initial handling of newborn infants, which is known to affect the pattern of exposure to microorganisms, may alter the risk of developing subsequent atopy, as indicated by hay fever.</p> <p>Methods: Analysis was performed on 5,519 members of the 1970 British Cohort Study, a nationally representative birth cohort. Cohort members with hay fever were identified at intervals up to the age of 26 years. Details of neonatal care and childhood circumstances were recorded prospectively. Those who had spent their first night away from their mother in the communal infant nursery were selected as likely to have experienced atypical exposure compared with infants who remained with their mother. Adjustment was made for potential confounding factors in infancy and childhood by multiple logistic regression analysis.</p> <p>Results: Unadjusted relative odds (with 95% CI) for developing hay fever among those spending the first night in the communal nursery, when compared with other infants who remained with the mother, were 1.48 (1.23-1.77), $P < 0.001$. Comprehensive adjustment for the potential confounding factors, including feeding practices on the first day of life, markers of social and material circumstances, and region, did not substantially alter this relationship, with adjusted relative odds of 1.31 (1.08-1.59), $P = 0.005$.</p> <p>Conclusions: While our proxy measure is associated with an increased risk of hay fever, further research is required to confirm that this is due to the pattern of infectious exposure in very early life. The results are consistent with the hypothesis that the first challenges are particularly important in the development of the newborn infant's immune system.</p> |
| POLLOCK, J.I. (1989) Health behaviour of women and long-term associations in their children. In Alberman, E (ed), The Needs of Parents and their children: Health Promotion Trust p 5-28 | Unavailable. |

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| <p>POLLOCK, J.I. (1992) Predictors and long term associations of reported sleeping difficulties in infancy. <i>Journal of Reproductive and Infant Psychology</i>, 10, 151-168.</p> | <p>Results are presented of a study on long-term associations between infant sleeping problems, as perceived by parents, and the clinical health, growth, behaviour and development of a national cohort of children born in 1970. The proportions of first-born and later-born children said to have frequent sleeping difficulties as infants up to 6 months of age were 17.7% and 11.2% respectively.</p> |
| <p>POLLOCK, J.I and GOLDING, J. (1993) Social epidemiology of chickenpox in two British national cohorts. <i>Journal of Epidemiology & Community Health</i>, 47(4), 274-281.</p> | <p>STUDY OBJECTIVE: To provide a quantitative description of factors independently predictive of reported chickenpox infections in two national cohorts of British children. DESIGN--Longitudinal cohort study design employing logistic regression analysis of data obtained in the 1970 British Births Survey (later to become the Child Health and Education Study, CHES), and the 1958 British Perinatal Mortality Survey (later to become the National Child Development Survey, NCDS).</p> <p>SETTINGS: One-week birth cohorts covering the whole of the United Kingdom.</p> <p>PARTICIPANTS: Data were obtained from questionnaires administered to the carers of 10,196 children born in the UK between 5 and 11 April 1970 (CHES) and 10,927 children born in the UK between 3 and 9 March 1958 (NCDS). These numbers consist of the whole of the surviving cohorts excluding those for whom data were incomplete.</p> <p>MEASUREMENTS: Biological, social, and medical factors in the parents and children, as recorded by the child's principle carer or from clinical notes.</p> <p>MAIN RESULTS: Chickenpox by the age of 10 years was reported to be more common in the children of advantaged families (higher social class, higher parental education levels), with a higher prevalence in those parts of the United Kingdom normally associated with affluence, such as the South East and South West of England, and lower rates in Wales and Scotland. Chickenpox by 10 years was also associated with more crowding in the home. A similar but less marked pattern occurred for chickenpox by the age of 11 years in the 1958 NCDS cohort. This social distribution apparently reflected overall rather than age-specific susceptibility.</p> <p>CONCLUSIONS: The national and international pattern of chickenpox epidemiology indicate that both social and climatological factors may be important in defining groups at risk. Further research is indicated if a vaccination service is to be implemented in this country.</p> |
| <p>Sabates, R. & Parsons, S. (2012). The contribution of Basic Skills to Health Related Outcomes during Adulthood: Evidence from the BCS70. Department for Business Innovations and Skills: BIS Research Paper No 91.</p> | <p>Key findings: We found that lack of adult numeracy skills were associated with deteriorating self-rated health for men and women.</p> <p>We also found that low adult literacy and numeracy skills were associated with worsening health limiting conditions. In particular, low numeracy was associated with worsening health limiting conditions for men and women and low literacy was associated with worsening health limiting conditions for women only.</p> <p>We found weak evidence that low basic skills are associated with smoking (as an indicator of a health behaviour). We only found that low literacy is associated with increased smoking for men</p> <p>Our results showed no evidence that basic skills are associated with depression (as an indicator of mental health).</p> |

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| <p>SCHOON, I and PARSONS, S. (2003) Lifestyle and health-related behaviour. In FERRI, E, BYNNER, J and WADSWORTH, M (ed), Changing Britain, Changing Lives: Three Generations at the End of the Century. London: Institute of Education.</p> | <p>This chapter describes the changing patterns of a number of health related behaviours among members of three national cohorts. It describes patterns of smoking, alcohol and drug use, exercise and diet. It describes differences by gender and social class.</p> |
| <p>STEWART-BROWN, S.L, FLETCHER, L and WADSWORTH, M.E.J. (2005) Parent-child relationships and health problems in adulthood in three national cohort studies. European Journal of Public Health, 15(6), 640-646.</p> | <p>Background: Event-based measures suggest that emotional adversity in childhood has a long-term health impact, but less attention has been paid to chronic emotional stressors such as family conflict, harsh discipline or lack of affection. This study aimed to assess the impact of the latter on health problems and illness in adulthood. Methods: Logistic regression and multinomial logistic regression analyses of data collected in three UK national birth cohort studies at ages 43 and 16 years covering subjective report of relationship quality from the 'child', and number of health problems and illnesses reported in adulthood at ages 43, 33 and 26 years adjusted for social class, sex and, in 1946 and 1970 cohorts, for symptoms of mental illness. Results: Reports of abuse and neglect (1946 cohort), poor quality relationship with mother and father (1958 cohort), and a range of negative relationship descriptors (1970 cohort) predicted reports of three or more illnesses or health problems in adulthood. Results were inconsistent with respect to one or two illnesses or health problems. Adjustment for sex, social class and poor mental health attenuated the odds of poor health, but measures of relationship quality retained a significant independent effect. Conclusions: Poor quality parent–child relationships could be a remediable risk factor for poor health in adulthood.</p> |
| <p>TAYLOR, B, GOLDING, J, WADSWORTH, J and BUTLER, N.R. (1982) Breast feeding bronchitis and admissions for lower respiratory illness and gastro-enteritis during the first five years. Lancet, 319(8283), 1227-1229.</p> | <p>The possible influence of breast-feeding on reported bronchitis and on admissions to hospital for lower-respiratory illness and gastroenteritis during the first five years was assessed in a longitudinal national British study of 13 135 children. Breast-feeding was found to have no significant association with rates of bronchitis or admission to hospital with lower-respiratory illness after allowance was made for influences associated with both lower-respiratory illness and likelihood of breast-feeding (maternal smoking, family social status, and birthweight). Admissions to hospital for gastroenteritis in the first year were marginally less likely in breast-fed infants.</p> |
| <p>WAYNFORTH, D. (2012) Life-history theory, chronic childhood illness and the timing of first reproduction in a British Birth Cohort. Proceedings of the Royal Society B, 279(1740), 2998-3002.</p> | <p>Life-history theoretical models show that a typical evolutionarily optimal response of a juvenile organism to high mortality risk is to reach reproductive maturity earlier. Experimental studies in a range of species suggest the existence of adaptive flexibility in reproductive scheduling to maximize fitness just as life-history theory predicts. In humans, supportive evidence has come from studies comparing neighbourhoods with different mortality rates, historical and cross-cultural data. Here, the prediction is tested in a novel way in a large (n = 9099), longitudinal sample using data comparing age at first reproduction in individuals with and without life-expectancy-reducing chronic disease diagnosed during childhood. Diseases selected for inclusion as chronic illnesses were those unlikely to be significantly affected by shifting allocation of effort away from reproduction towards survival; those which have comparatively large effects on mortality and life expectancy; and those which are not profoundly disabling. The results confirmed the prediction that chronic disease would associate with early age at first reproduction: individuals growing up with a serious chronic disease were 1.6 times more likely to have had a first child by age 30. Analysis of control variables also confirmed past research findings on links between being raised father-absent and early pubertal development and reproduction.</p> |

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