

RESEARCH REPORT

Does material disadvantage explain the increased risk of adverse health, educational, and behavioural outcomes among children in lone parent households in Britain?

A cross sectional study

Nick Spencer

J Epidemiol Community Health 2005;**59**:152–157. doi: 10.1136/jech.2004.020248

Objective: To test the hypothesis that material disadvantage explains the increased risk among children and young people of adverse health, educational, and behavioural problems associated with living in lone parent households in Britain

Study design: Secondary analysis of a cross sectional survey of a representative sample of British households with children and youth

Main outcomes: Parent reported fair/poor health, longstanding illness and disability, statement of special educational needs, suspension and/or expulsion from school, and in trouble with the police.

Participants: Data were available on 15 636 (8049 boys and 7587 girls) aged 0–18 years in 8541 households in the third sweep (2001) of the British government's families and children study

Results: Lone parenthood was associated with increased risk of health and educational problems, and antisocial behaviour among boys and girls in a logistic regression model adjusting for child's age alone. Adding age of main carer, number of dependent children, and child's rank in the household made little difference to the associations. Addition of housing tenure, household hardship index, and an interaction term for lone parenthood and hardship eliminated the relation with lone parenthood for all outcomes except parent reported health among girls. Similar results were obtained for households headed by lone parents for at least a year. An interaction effect of lone parenthood with hardship for parent reported health and statement of special educational needs was noted.

Conclusion: Adverse effects of lone parenthood on health, education, and antisocial behaviour were apparently explained by material disadvantage in this cross sectional sample of British households with children and youth.

Correspondence to:
Professor N Spencer,
School of Health and
Social Studies and
Warwick Medical School,
University of Warwick,
Coventry CV4 7 AL, UK;
n.j.spencer@warwick.
ac.uk

Accepted for publication
19 April 2004

Lone parent families now represent around 22% of British families and 20% of British children.¹ This trend is not evenly distributed throughout the population: lone parenthood either resulting from never married lone mothers or divorce is more common in disadvantaged groups.² The changing structure of families that has resulted in a fifth of children living with one parent has precipitated concerns for the health and wellbeing of children living in these non-traditional households.³ Studies from various countries report increased rates of emotional and behavioural problems particularly among boys in lone parent families,^{4–17} increased risk of all cause mortality among boys and suicide and psychiatric morbidity among boys and girls,¹⁸ increased rates of accidents,^{19–20} and consultations for infections.²⁰ However, the conclusions of many of these studies are weakened by inadequate adjustment for confounding by socioeconomic status. Lone parent families are significantly disadvantaged compared with couple families^{21–23} and where adjustment is made for socioeconomic status the effects of lone parenthood on childhood outcomes are attenuated.^{4 12–18}

However, the extent to which material disadvantage explains adverse outcomes remains inconclusive. British studies have reported conflicting results. A study based on the Avon longitudinal study of parents and children¹⁴ found that maternal psychosocial status combined with quality of mother-child relationship and social risk factors accounted for the increased risk of behavioural and emotional difficulties in the older children of lone mothers but not in their 4 year old children. In the 1999 British child mental health

survey,¹⁵ control for socioeconomic factors did not entirely account for the increased risk of a psychiatric diagnosis among children in lone parent families. Wadsworth *et al*¹⁷ reported persistence of the relation between family structure and childhood behavioural and developmental problems after controlling for maternal education and neighbourhood type in the 1970 British national cohort study. By contrast, two studies based on the 1958 British national cohort study,^{12 16} showed that maternal education and material disadvantage explained the apparent relation between family structure and children's cognitive and behavioural outcomes. Material disadvantage also fully explained the high prevalence of psychological morbidity among children of lone mothers in a cross sectional study based on the health survey for England.⁴ Differences in numeracy and literacy between children of lone mothers and two parent families in Britain have been shown to be eliminated when material disadvantage is taken into account.²⁴

Studies from other countries also report conflicting results. A well designed Swedish population based study of almost one million children,¹⁸ although showing attenuation of effect size by socioeconomic status adjustment, reported twofold increased risk associated with living in a lone parent family of psychiatric disease, suicide, attempted suicide, alcohol and narcotics related disease in boys and girls, and all cause mortality in boys compared with those in two parent

Abbreviations: SEN, special educational need; FCS, families and children study

households. In a study based on the Canadian national longitudinal survey of children and youth (cycle 1—1994–95)¹³ the variance in children's social impairment, psychiatric problems, and maths scores associated with single mother family status was largely, but not completely, explained by household income. Studies based on US data have shown that material disadvantage explains the higher prevalence of behavioural¹⁶ and adverse educational outcomes^{25–26} among children of lone parent families.

In summary, while there is no dispute in the literature that lone parenthood is associated with a range of adverse health and educational outcomes in childhood, the extent to which this association is accounted for by material disadvantage remains unclear. There are various possible explanations for this lack of clarity. Firstly, the extent to which material disadvantage determines the adverse effects of living in lone parent households may vary with the outcomes studied. For example, it is possible that psychological health may be more susceptible than physical health to the impact of lone parenthood than the impact of material disadvantage. Secondly, the impact of material disadvantage on children living in lone parent households may be underestimated if the measures of socioeconomic status used do not adequately reflect the extent of material disadvantage among these families and therefore may be susceptible to residual confounding.²⁷ Thirdly, the duration of, and reason for, lone parenthood may influence both the extent of material deprivation and its impact on children. Finally, the social, economic, and political context of the country in which the study has been carried out is likely to influence the differential impact of lone parenthood and material disadvantage on children. For example, the policy contexts in the UK and Sweden are very different²¹ and the US policy context is even further from that of Sweden. Although this paper is unable to address all these explanations, it aims to provide evidence from a contemporary representative British sample using a direct measure of household material disadvantage and a range of adverse outcomes in childhood and youth.

Using data from the third wave (2001) of the families and children study (FCS),²⁸ I tested the hypothesis that the effect of lone parenthood in Britain on parent reported health, longstanding illness, special educational needs, and two measures of antisocial behaviour (contact with police and school suspension/expulsion in preceding year) among children and young people is explained by material disadvantage. To my knowledge this is the first study to examine the relation between parent reported health and longstanding illness and the two measures of antisocial behaviour, lone parenthood and material disadvantage among British children and young people.

METHODS

Secondary analysis of data on children and youth whose families participated in the 2001 sweep of the FCS²⁸ was undertaken. The FCS is a refreshed panel survey that started in 1999 with annual surveys of which the 2001 sweep is the third and the last for which complete data are available. The survey was extended in 2001 to include a representative sample of all couple families so that the study is now a survey of all families with dependent children aged 0–18 years.²⁸ The responding parent or guardian was interviewed in the home using a structured interview schedule including household relationships and sociodemographics, child and adult health, child behaviour, and school progress.

I extracted data on the outcomes of interest related to 15 636 children in the 8541 households included in the survey: parent reported health (fair/poor versus very good/good), longstanding illness (yes versus no), child subject of

Table 1 Household sociodemographic characteristics in lone and couple parent households

Sociodemographic characteristics	Numbers (%)	
	Lone (n = 2545)	Couple (n = 5996)
Housing tenure		
Rented	1678 (65.9)	1170 (19.5)
Owner/occupied	852 (33.5)	4804 (80.1)
Missing	15 (0.6)	22 (0.4)
Hardship index		
Severe	597 (23.5)	304 (5.1)
Moderate	944 (37.1)	1132 (18.9)
No hardship	1004 (39.4)	4560 (76.1)
Household with no working adult		
Yes	1325 (52.1)	427 (7.1)
No	1217 (47.9)	5569 (92.9)
Dependent children (benefit definition)		
None	208 (8.2)	174 (2.9)
1	1154 (45.3)	2150 (35.9)
2	785 (30.8)	2532 (42.2)
3+	398 (15.6)	1140 (19.0)
Age of children		
0–11	2723 (63.7)	7488 (65.9)
12–14	748 (17.5)	1845 (16.2)
15–18	804 (18.8)	2028 (17.9)
Age of responding adult		
<20	60 (2.4)	30 (0.5)
20–29	577 (22.7)	768 (12.8)
30–39	1002 (39.4)	2758 (46.0)
40+	880 (34.6)	2431 (40.5)
Missing	26 (1.0)	9 (0.2)
Sex of children		
Boys	2175 (50.9)	5874 (51.7)
Girls	2100 (49.1)	5487 (48.3)

statement of special educational needs (SEN statement) (yes versus no), contact with police in previous year (yes versus no), and suspended and/or expelled from school in previous year (yes versus no). Lone parenthood at the time of the survey (yes versus no) was the main explanatory variable of interest. Lone parenthood for at least a year (between the 2000 and 2001 sweeps) was used as a secondary explanatory variable of interest. Data were also extracted for potential confounding variables: household demographics—age of child in years, age of responding parent (years), number of dependent children (based on child benefit definition), and rank of the child in the family; measures of household material disadvantage—socioeconomic circumstances represented by the hardship index (see below) and housing tenure). The hardship index, developed in the FCS²⁸ (appendix E), comprised nine variables: ≥ 2 problems with accommodation and cannot afford repairs if home owner; overcrowding; cannot afford to keep home warm; frequent money worries and runs out of money most weeks; no bank account and has ≥ 2 debts; relative material deprivation score on food items in highest 7.5%; relative material deprivation score on clothing items in highest 7.5%; relative material deprivation score on consumer durables in highest 7.5%; relative material deprivation score on leisure activities in highest 7.5%. Family scores on hardship (zero to nine) were categorised into three levels of hardship: no hardship—zero on the nine point scale; moderate hardship—one or two on the scale; severe hardship—three or more on the scale. To test for an interaction effect of lone parenthood with material disadvantage, an interaction term (lone parenthood \times hardship index) was created.

Logistic regression models were fitted on each outcome adding lone parenthood and age of the child in model 1, household demographics (age of responding parent, number

Table 2 Multivariate models for parent reported health status, longstanding illness, statement of special educational needs, and antisocial behaviour for children in single parent families compared with those in two parent families

	Number of cases (%)	Model 1 (odds ratio, 95% CI)	Model 2 (odds ratio, 95% CI)	Model 3 (odds ratio, 95% CI)
Parent reported health status				
Boys	1360 (16.9)	1.33 (1.17 to 1.51)	1.24 (1.09 to 1.42)	1.11 (0.59 to 1.46)
Girls	1258 (16.7)	1.57 (1.38 to 1.79)	1.52 (1.33 to 1.48)	1.26 (1.13 to 3.60)
Longstanding illness				
Boys	1388 (17.3)	1.29 (1.13 to 1.46)	1.29 (1.13 to 1.46)	0.95 (0.76 to 1.19)
Girls	1110 (14.7)	1.33 (1.10 to 1.59)	1.38 (1.20 to 1.58)	1.09 (0.86 to 1.38)
Statement of SEN				
Boys	406 (5.9)	1.35 (1.10 to 1.66)	1.40 (1.13 to 1.75)	1.20 (0.81 to 1.77)
Girls	164 (2.5)	1.34 (0.97 to 1.85)	1.43 (1.02 to 2.00)	1.10 (0.59 to 2.04)
Contact with police				
Boys	228 (6.6)	2.16 (1.65 to 2.84)	2.03 (1.54 to 2.67)	1.43 (0.87 to 2.35)
Girls	98 (2.9)	1.95 (1.30 to 2.93)	1.88 (1.24 to 2.86)	1.27 (0.59 to 2.74)
Suspension/expulsion from school				
Boys	232(4.2)	2.25 (1.72 to 2.94)	2.09 (1.59 to 2.75)	1.34 (0.80 to 2.34)
Girls	58(1.1)	2.40 (1.43 to 4.03)	2.38 (1.40 to 4.03)	1.22 (0.46 to 3.22)

Model 1, adjusted for age of child. Model 2, adjusted for age of child, age of responding parent, number of dependent children, child's rank in family. Model 3, adjusted for age of child, age of responding parent, number of dependent children, child's rank in family, household hardship index, housing tenure, and interaction term (lone parenthood \times household hardship index).

of dependent children, child's rank in the family) in model 2, and measures of material disadvantage (household hardship index, housing tenure, and the interaction term—lone parenthood \times hardship index) in model 3. Estimates were made of the percentage reductions in adverse outcomes that would have been achieved if all children had had the same risk as those experiencing no hardship, those in couple families and those in couple families with no hardship. All analyses were carried out in SPSS version10 (SPSS, Chicago, 1998).

RESULTS

There were 15 636 children and young people (8049 boys and 7587 girls) aged 0–18 years in the study. Numbers varied with the outcomes studied mainly because three of the variables (SEN statement, contact with the police in the preceding year, and suspension/expulsion from school in the preceding year) applied only to older children and those attending school. Lone parent households were more disadvantaged than couple households: they were over six times more likely to be workless, three times more likely to live in rented accommodation, and three times more likely to be in severe or moderate hardship (table 1). Lone parents also tended to be younger than couple parents.

Parents reported similar rates of fair/poor general health and longstanding illness among boys and girls but boys were reported to be twice as likely as girls to have SEN statements, and to have been in trouble with the police, and more than three times as likely to have been suspended and/or expelled from school in the preceding year.

Both boys and girls in lone parent households have increased risk of all adverse outcomes when adjusted for age of child alone and age plus household demographic factors (see models 1 and 2 in table 2). The risk is eliminated for all but parent reported health among girls once household hardship, housing tenure and the interaction term (lone parenthood \times hardship index) are accounted for (model 3 in table 2). Being a lone parent and suffering severe hardship (as represented by the interaction term) was independently associated with parent reported fair/poor health in both boys (adjusted odds ratio 1.82(95% CI 1.04 to 3.21) and girls (adjusted odds ratio 2.02(95%CI 1.13 to 3.60) and with

Key points

- The increased risk of adverse health, educational, and antisocial behaviour outcomes among children and young people living in lone parent households in Britain is apparently accounted for by material disadvantage
- There is some evidence that living in a lone parent household and experiencing severe material disadvantage is associated with an additional risk for some outcomes over and above that associated with material disadvantage
- This is the first paper to report on the relation between lone parenthood, material disadvantage, and parent reported general health and longstanding illness, and receipt of a statement of special educational needs in a representative sample of British households with children and young people

receipt of a SEN statement in boys (adjusted odds ratio 2.70(95% CI 1.04 to 6.99). The interaction term failed to reach statistical significance at the 5% level for the remaining outcomes.

Similar results (not shown) were obtained when lone parenthood for at least one year was entered into the models as the main variable of interest. Lone parenthood for at least one year was associated with an increased risk among boys and girls that was eliminated once measures of material disadvantage were added to the models.

Estimates of avoidable adverse outcomes were as follows: based on household hardship alone, 176 (30.6%) SEN statement, 107 (36.6%) school suspensions/expulsions, 112 (28.6%) trouble with police, 541 (20.6%) fair/poor health, and 301 (12.1%) longstanding illness/disability; based on lone or couple parent household, 39 (6.7%) SEN statement, 75 (25.7%) school suspensions/expulsions, 88 (22.4%) trouble with police, 230 (8.7%) fair/poor health, and 161 (6.4%) longstanding illness/disability; based on interaction term (lone parenthood \times hardship index), 204 (35.4%) SEN

statement, 134 (45.9%) school suspensions/expulsions, 160 (40.8%) trouble with police, 620 (23.6%) fair/poor health and 349 (14.0%) longstanding illness/disability. As suggested by the multivariate logistic regression models, family hardship is more important for these outcomes than whether the child or young person is living in a lone or couple parent household and there is some evidence of an interaction effect of lone parenthood with hardship.

DISCUSSION

The findings confirm the study hypothesis that the increased risk of adverse health, educational, and antisocial behavioural outcomes for children and young people living in lone parent households in Britain is apparently explained by material disadvantage. For some outcomes, particularly parent reported health, there is evidence that the combination of lone parenthood and material hardship is associated with greater risk than either of these variables alone. They are consistent with findings of previous studies from Britain^{4 12 16} and the US¹⁶ that material disadvantage explains the increased risk of behavioural and emotional problems among children of lone parents. Receipt of a statement of SEN is often, although not always, associated with impaired cognitive ability and these findings are consistent with studies showing the adverse educational outcomes associated with lone parenthood are explained by material disadvantage.²⁴⁻²⁶ I have not found comparable studies examining the relation between parent reported health status and longstanding illness, lone parenthood, and material disadvantage. The findings of this study will need to be tested in other datasets but they support the hypothesis that material disadvantage is more important than lone parenthood in explaining variation in parent reported health status and longstanding illness among British children and youth.

As discussed above, the conflicting findings of studies examining the effects of lone parenthood and material disadvantage on the health and wellbeing of children and young people may be attributable to a number of factors. Subtle differences in measures of emotional and behavioural outcomes, the most commonly researched in relation to the effects of lone parenthood, may reflect real differences in the ways in which lone parenthood and material disadvantage interact to influence outcomes. For example, the measures of social impairment and psychiatric disorder used in the Canadian national longitudinal study of childhood and youth¹³ are likely to measure different dimensions of childhood emotional and behavioural development compared with the strengths and difficulties questionnaire used in the health survey for England.⁴ The largest and most methodologically robust study¹⁸ showing persistent effects of lone parenthood after adjustment for material disadvantage uses suicide and hospital discharge records to measure psychological disorders in childhood and youth. As the authors point out, these

measures avoid the potential bias associated with parent reporting, perhaps leading to a less biased estimate of the relation between psychiatric disorder, lone parenthood, and material disadvantage. The behavioural outcomes (in trouble with the police and suspended/expelled from school) reported in this study have not been used before and may be subject to reporting bias but are less likely to be influenced by subjective interpretation than measures such as the strengths and difficulties questionnaire and are good proxies for antisocial behaviour among young people.

The effects of lone parenthood on children are likely to vary depending on whether it is attributable to divorce, death of a parent, or single motherhood from the birth of the child. McMunn *et al*⁴ compared the effects of living in five different family types: families with both natural parents; "reconstituted" families; lone mother families where the mother was previously married; lone mother families in which the mother had never been married; lone father families. Once material disadvantage had been accounted for children in lone mother families (either previously or never married) were at no increased risk compared with those in families with both natural parents. However, children in "reconstituted" families remained at higher risk after controlling for socioeconomic factors. Joshi *et al*¹⁶ studied the effects of different types of non-traditional family structures in Britain and USA and once levels of human, financial, and social capital had been accounted for none of these family types remained significantly related to child wellbeing. Neither the Swedish study¹⁸ nor this study distinguished between different types of lone parent household and it is possible that different results may have been obtained by type of lone parent household.

Duration of lone parenthood may also influence child health outcomes as well as the household economy. Longitudinal studies provide the most reliable data on duration although none of the studies using longitudinal data^{8 12-14 16 17} report specifically on the effects of duration of exposure on children. The Swedish study¹⁸ compared children living with the same single parent in both 1985 and 1990 with those living with the same two parents in both years. Thus, the comparison was between children probably experiencing five years continuous exposure to either lone parenthood or living with two parents although the researchers had no knowledge of possible changes to family structure in the intervening years. In my study, I was able to identify children who had been in households with the same lone parent for at least one year. The results did not differ for this group compared with those who were in lone parent households at the time of the study (2001).

A further major consideration in studies examining the extent to which the relation between lone parenthood and adverse behavioural, health, and educational outcomes is accounted for by material disadvantage is the measures of disadvantage used. Measures that fail to identify the extent of material disadvantage are likely to be subject to residual confounding leading to an underestimate of the effect of material disadvantage on the relation between the outcome and exposure of interest.²⁸ For example, socioeconomic status measures based on occupation, used by two of the studies controlling for material disadvantage,^{4 18} are likely to underestimate the material disadvantage in lone parent households as mother only households are often difficult to classify by occupation. Although both these studies controlled for additional socially related variables, reliance on occupation based measures is likely to underestimate the extent of material disadvantage in lone parent households. Maternal education, used as a proxy socioeconomic status measure in three studies,^{4 14 16} is also likely to underestimate material disadvantage increasing the potential for residual

Policy implications

- Policy initiatives in Britain to reduce material disadvantage among households with children, with particular attention to financial situation of lone parent households, are likely to lead to improvement in child health and wellbeing and reduction in antisocial behaviour
- Different policy contexts, such as those in Britain and Sweden, may lead to different pathways to health disadvantage among children

confounding in studying the relation between lone parenthood and adverse outcomes for children. Direct measures of income,^{13–16} proxy income measures such as housing tenure in Britain,⁴ and measures of material hardship such as that used in this study are likely to better reflect comparative levels of disadvantage in lone and couple parent households.

Different policy contexts may mean lone parenthood is fundamentally different in different societies.²⁹ In other words, the greater degree of material disadvantage suffered by lone parents in Britain and the USA compared with, for example, Sweden²⁹ may mask the negative effect on specific health outcomes of other risk factors not solely dependent on family socioeconomic status. For example, societal prejudice against lone parents may act to marginalise children and families leading to adverse psychological impacts on children despite relative financial security.

Strengths and limitations

The main strength of this study was the availability of detailed data on household hardship that is likely to better reflect the household socioeconomic status than the more commonly used occupation based measures such as social class. This is particularly important when studying the effects of lone parenthood as their households are more likely than couple households to have no working adult (see table 1). As discussed above, residual confounding by socioeconomic status is less likely to occur when a more precise measure of household socioeconomic status is used.²⁹

Clustering of adverse health outcomes in families with more than one child may have introduced bias into the study. However, inclusion of number of dependent children and child's rank in the family in the logistic regression models should have accounted for much of this potential bias.

Data on different types of lone parenthood have not been included in the study so no distinction can be made between the effects on children of lone parenthood resulting from divorce compared with never married or "reconstituted" families. Children experiencing lone parenthood for at least one year had risks of adverse outcomes similar to those for children in lone parent households at the time of the survey that were eliminated once material disadvantage was accounted for in logistic regression models.

A further limitation of the study is the reliance on parental reporting of health, educational, and antisocial behaviour outcomes. The study does not use standardised outcome measures although the health status and longstanding illness questions have been extensively used in British household surveys. An important area of child and adolescent morbidity, emotional and psychological disorder, is inadequately covered by the outcome measures studied here. It may be, as suggested by the findings of the Swedish study¹⁸ using confirmed psychiatric diagnoses, that lone parenthood has a greater impact on these outcomes than material disadvantage. Further studies in societies such as the UK and USA in which lone parent households are more likely to be materially disadvantaged will be necessary to explore the relation of lone parenthood, disadvantage, and psychiatric morbidity in childhood and adolescence.

Conclusions

These results confirm the findings of other British and US studies^{4–16} that material disadvantage apparently explains the disparity in emotional and behavioural outcomes among children and young people living in lone parent households. They extend these findings further to show that children and young people in lone parent households are at greater risk of parent reported fair/poor health, longstanding illness, and officially identified special educational need because of the increased material disadvantage associated with living in a

lone parent household in Britain rather than family structure itself.

The policy implications of these findings are considerable. If child health is more closely linked to material disadvantage than to family structure, policy should be directed towards reducing material disadvantage among households with children. Material disadvantage is not confined to lone parent households and exclusive focus on the financial situation of these households would be inappropriate; however, lone parenthood should be recognised as a family structure that is vulnerable to financial hardship particularly in countries such as the UK and the USA. In addition, the findings caution against drawing conclusions linking lone parenthood to adverse outcomes for children and young people based on studies from different policy contexts. Rather they support future research to increase understanding of the subtleties of the multiple pathways to health disadvantage in specific societies.²⁹

ACKNOWLEDGEMENTS

Thanks are due to Professor Alan Marsh and Dr S McKay, the principal investigators in the FCS, and to the UK data archive at the University of Essex for permission to access and use the data.

Funding: none.

Conflicts of interest: none declared.

REFERENCES

- 1 Haskey J. One-parent families and their dependent children in Great Britain. In: Ford R, Millar J, eds. *Private lives and public responses*. London: Policy Studies Institute, 1998:22–41.
- 2 Marsh A, Perry J. *Family change 1999–2001, research report 180*. London: Department for Work and Pensions, 2003.
- 3 Ford R, Millar J, eds. *Private lives and public responses*. London: Policy Studies Institute, 1998.
- 4 McMunn AM, Nazroo JY, Marmot MG, et al. Children's emotional and behavioural well-being and the family environment: findings from the health survey for England. *Soc Sci Med* 2001;**53**:423–40.
- 5 Garnefski N, Diekstra RFW. Adolescents from one parent, stepparent and intact families: emotional problems and suicide attempts. *J Adolesc* 1997;**20**:201–8.
- 6 Luoma I, Puura K, Tamminen T, et al. Emotional and behavioural symptoms in 8–9 year old children in relation to family structure. *Eur Child Adolesc Psychiatr* 1999;**8**(suppl 4):IV29–40.
- 7 Clark JJ, Sawyer MG, Nguyen AM, et al. Emotional and behavioural problems experienced by children living in single-parent families: a pilot study. *J Paediatr Child Health* 1993;**29**:338–43.
- 8 Spruijt E, DeGoede M, Vandervalk I. The well-being of youngsters coming from six different family types. *Patient Educat Counselling* 2001;**45**:285–94.
- 9 Franz M, Lensche H, Schmitz N. Psychological distress and socioeconomic status in single mothers and their children in a German city. *Soc Psychiatr Psychiatr Epidemiol* 2003;**38**:59–68.
- 10 Underwood P, Kamien M. Health care needs of the children of single mothers in a Perth suburb. *Aust Paediatr J* 1984;**20**:203–4.
- 11 Le Blanc M, McDuff P, Tremblay RE. Types of families, living conditions, functioning family systems and social maladjustment during latency and adolescence in underprivileged milieus (French). *Sante Ment Que* 1991;**16**:45–75.
- 12 Buchanan A, Ten Brinke J, Flouri E. Parental background, social disadvantage, public "care", and psychological problems in adolescence and adulthood. *J Am Acad Child Adolesc Psychiatry* 2000;**39**:1415–23.
- 13 Lipman EL, Boyle MH, Dooley MD, et al. Child well-being in single-mother families. *J Am Acad Child Adolesc Psychiatry* 2002;**41**:75–82.
- 14 Dunn J, Deater-Deckard K, Pickering K, et al. Children's adjustment and prosocial behaviour in step-, single- parent and non-stepfamily settings: findings from a community study. ALSPAC study team. Avon longitudinal study of pregnancy and childhood. *J Child Psychol Psychiatry* 1998;**39**:1083–95.
- 15 Meltzer H, Gatward R, Goodman R, et al. *Mental health of children and adolescents in Great Britain*. London: The Stationery Office, 2000.
- 16 Joshi H, Cooksey EC, Wiggins RD, et al. Diverse family living situations and child development: a multi-level analysis comparing longitudinal evidence from Britain and the United States. *International Journal of Law Policy and the Family* 1999;**13**:292–314.
- 17 Wadsworth J, Burnell I, Taylor B, et al. The influence of family type on children's behaviour and development at five years. *J Child Psychol Psychiatr* 1985;**26**:245–54.
- 18 Ringbäck Weitöft G, Hjern A, Haglund B, et al. Mortality, severe morbidity, and injury in children living with single parents in Sweden: a population-based study. *Lancet* 2003;**361**:289–95.
- 19 Wadsworth J, Burnell I, Taylor B, et al. Family type and accidents in preschool children. *J Epidemiol Community Health* 1983;**37**:100–4.

- 20 **Fleming DM**, Charlton JRH. Morbidity and healthcare utilisation of children in households with one adult: comparative observational study. *BMJ* 1998;**16**:1572–6.
- 21 **Whitehead M**, Burström B, Diderichsen F. Social policies and the pathways to inequalities in health: comparative analysis of lone mothers in Britain and Sweden. *Soc Sci Med* 2000;**50**:255–70.
- 22 **Hope S**, Power C, Rodgers B. Does financial hardship account for elevated psychological distress in lone mothers? *Soc Sci Med* 1999;**49**:1637–49.
- 23 **Benzeval M**. The self-reported health status of lone parents. *Soc Sci Med* 1998;**46**:1337–53.
- 24 **Wiggins DW**, Wale C. Modeling intergenerational transmission in longitudinal cohorts using multilevel methods. *Bulletin de Methodologie Sociologique* 1996;**51**:27–41.
- 25 **Cooksey EC**. Consequences of young mothers' marital histories for children's cognitive development. *J Marriage Fam* 1997;**58**:693–707.
- 26 **Smith JR**, Brooks-Gunn J, Klebanov PK. Consequences of living in poverty for young children's cognitive and verbal ability and early school achievement. In: Duncan GJ, Brooks-Gunn J, eds. *Consequences of growing up poor*. New York: Russell Sage Foundation, 1997.
- 27 **Davey Smith G**, Phillips AN. Confounding in epidemiological studies: why "independent effects" may not be all they seem. *BMJ* 1992;**305**:757–9.
- 28 **Vegeris S**, Perry J. *Families and children 2001: living standards and the children. Research report 190*. London: Corporate Document Services on behalf of Department for Work and Pensions, 2003.
- 29 **Whitehead M**, Holland P. What puts children of lone parents at a health disadvantage? *Lancet* 2003;**361**:271.