INTRODUCTION

Childhood experience has a central position in debates about the origins of social exclusion, the idea of which moves the emphasis in developmental problem processes away from disadvantage and individual failings to obstacles in the way of full participation in society, which it is the task of policy to remove.

The processes and the outcomes of social exclusion begin early in life and are manifested at all stages of life, producing a marginalised existence in adulthood, the routes to and outcomes of which may take a number of forms. These include: poor acquisition of basic skills; early leaving from education without qualifications; early labour market entry problems; including jobs without training, casual work and unemployment, teenage pregnancy; trouble with the police; drug and alcohol abuse; criminal convictions; poor physical and, especially, mental health; lack of engagement with the social and political functions of citizenship.

The social exclusion process itself is continuous, in the sense that one outcome leads to another, and it is also to a degree cyclical in its effects, in the sense that its outcomes are mutually reinforcing and may be damaging to achievements earlier in life. For example the

---

1 This paper originated in papers presented at the Her Majesty's Treasury (HMT) seminar on 21 January 1998 and the Ministerial Briefing meeting hosted by HMT and the Joseph Rowntree Foundation on 11 March 1998, as part of the HMT cross-departmental review, Provision for Young Children. The titles were "Which children are most at risk of social exclusion" and "What are the causes of social exclusion affecting young children?". The present paper also draws upon other papers presented at the seminars. The views expressed are those of the author alone.
experience of family conflict at a particular stage of childhood may not only hold back the
child educationally relative to peers, but he or she may regress to earlier levels of cognitive
performance and behaviour (Bergman and Magnusson, 1995; Caspi et al, 1996).

A common theme in such accounts is one of risk. The child encounters adverse conditions in
his or her social environment which increase the risk of social exclusion later. Whether or
not the child succumbs to the risk, will depend on their own personal characteristics and
social influences stemming from the family and outside which buttress him or her against it
and strengthen resilience. This emphasises the dynamic nature of developmental processes
which are continually adapting to and adapting the social environment in the light of
experience (Bronfenbrenner, 1979; Alwin;1994). It also underlines the potential for policy
to move development in positive directions.

Accordingly, to understand the origins of social exclusion in adulthood we need to be able to
identify the conditions and experiences early in life which lay the child open to the risk of
social exclusion. We are uniquely placed in Britain to undertake the task, because of the
large-scale longitudinal datasets which are available to us. These include the three birth
cohort studies, starting in 1946, 1958 and 1970 respectively, which have followed up
individuals from birth to adulthood. This comprises the whole birth cohort of up to 16,500
people in the case of the cohorts born in 1958 (Ferri, 1993) and 1970 (Bynner, Ferri, and
Shepherd, 1997); and a sample of in the order of 5000 in the 1946 cohort study (Wadsworth,
1991). The life histories captured by the longitudinal data collected in these studies can be
used retrospectively to identify the circumstances and experiences early in life which precede
particular problems in adulthood. They can also be used prospectively to identify children at
risk of later social exclusion and the accumulation of risk as they get older (Rutter, 1988;
Fillmore, 1988; Alwin, 1994). The collection of data from cohort members’ children, as in
the 1958 and 1946 cohort studies, gives the added opportunity of finding out the extent to
which social exclusion processes are repeated from one generation to the next, e.g. Gregg and
Machin (in press). From the birth cohort studies therefore we can learn what factors early in
life increase the risk of social exclusion and which factors help to resist it.

This paper examines some of the predisposing conditions for social exclusion, focusing on
two identified with early childhood experience: poor early educational attainment, especially
failure to acquire the basic skills of literacy and numeracy, and behaviour problems.

**Importance of early learning**

Research here and overseas has for a long time established that the early stages of life, even
the first year of growth, are of enormous importance in development earlier on. According to
a 1994 Carnegie Foundation report, during the first year of life brain development is rapid
and extensive and much more vulnerable to environmental influence than previously realised.
Early stress has been shown to have a negative impact on brain function (Pugh, 1997). Even
at 22 months there is evidence from the 1970 birth cohort study (BCS70) of social gradients
in cognitive development (Feurstein, 1997). What takes place before school, therefore, is as
important, if not more important, as what happens when school begins. An illustration of this
effect is shown from the development of literacy and numeracy skills from birth up to
adulthood (age 33) in the 1958 birth cohort study - The National Child Development Study
(Figure 1a and 1b).
The graph shows the proportion of variation in literacy and numeracy in men and women respectively in adulthood which can be explained in terms of circumstances and experiences at different ages to which the developing individual is subjected. Two points stand out:

1. There is a rapid rise in the proportion of variation explained through the pre-school and primary school years, with levelling off from about 11 onwards, and with only small additional amount of variation explained from 16 on.

2. Although the graph points to a high degree of predictability in educational outcomes from earlier circumstances and experiences - by age 33, 40% of the variation in basic skill can be explained - a lot of unpredictability still remains about them.

Clearly early childhood experience accounts for a lot of basic skills acquisition, but the fact that there is still a lot of unexplained variation shows that in educational terms there is still much to play for. Some of the unexplained variation is due to the inaccuracy of our measurements of child development. The rest is due to the unpredictable influences which shape individual life patterns - the job you get, who you know and so on. Many people who end up in socially excluded categories do not show these signs and symptoms in childhood. Similarly, many at risk of social exclusion, overcome their difficulties later on. (Pilling, 1990; Sampson and Laub, 1993; Moffitt and Harrington, 1996).

Reported in the paper by Gillian Pugh (Thomas Coram Foundation), *Children at risk of becoming socially excluded: an introduction to the 'problem'*, HMT Seminar, 21 January 1998.
Thus we need to be aware of both the importance of early years experience in accounting for adult outcomes, and also the value of remediation during adulthood itself. Adult functioning is attributable as much to individual life patterns as it is to fixed characteristics and early experiences (Bynner and Steedman, 1995; Parsons and Bynner, 1998).

3. Childhood risk factors

3.1 Reviewing all the predisposing conditions for the social exclusion outcomes mentioned earlier, a common set of features, with some variations across particular outcomes, is identified. These are listed below under four broad headings: material factors, child factors, family factors and school factors. One of the key findings from all of the statistical modelling that has been done to try to identify the individual effects of these separate characteristics and their effects in combination, (e.g. Gregg and Machin, 1997; Kiernan, 1995), is the key role of poor educational achievement, which is typically associated with all of them.

Material factors

3.2 Material factors include the situational effects of living in poor conditions in areas which are generally disadvantaged, but particularly, at the level of individual family life, poor standard rented accommodation, overcrowding, and low family income, especially the children’s need for free school meals.

Child factors
3.3 These include the visual motor skills of the kind demonstrated through copying design tests, and all later cognitive skills developed through primary school, including vocabulary, reading and numberwork. There are also temperamental difficulties and behavioural problems in school which play a role particularly in relation to outcomes to do with later criminality. Poor school attendance is also a factor. Physical characteristics of children, apart from specific learning related difficulties to do with physical disability, do not generally feature, but low birth weight has shown up in some studies.

Family factors

3.4 These include parents’ own lack of education, lack of parental interest and support as reported by teachers, or indications that the teachers do not know whether the parents are interested or not. This is often coupled with low aspirations. Material disadvantages in the parents’ own childhood also emerge as important. Poor relationships within the family, especially between parents and children, leading to lack of attachment to adult role models and lack of social controls on the children, are another set of risk factors, as are frequent changes of carer and parental absence, and the father being long-term unemployed.

School factors

3.5 Pre-school experiences are important especially those to do with laying the foundations of primary education, reading to children and so on; attending nursery school or play group can be part of this. Absence of them can be a risk factor. In school itself, the main risk factors are
to do with being in a low stream, and experiencing remedial education. The social class composition of the school intake also features as does the type of catchment area.

Vulnerable Groups

3.6 Taken on its own no single risk factor in the list above is likely to produce social exclusion. It is in combination that their potency becomes apparent. Certain geographical locations, especially in the inner cities, are likely to show higher than average concentrations of risk centred on poor housing, family poverty and low achieving schools. But the most clearly vulnerable children are those where the key family relations are weak or absent. Children growing up in care are the most obvious example, followed by children with absent parents, parents with alcohol or drug problems, and those with criminal records (Robins and Rutter, 1990). Children with disabilities, especially those growing up in difficult material circumstances, are also particularly vulnerable. However, advocates of area based policies to target risk where it is highest, e.g. on run-down inner city housing estates, can overlook the fact that concentration of risk - i.e. high mean values for the indicators - are also accompanied by variability. For example, in 1997, 230,000 children were identified as living in deprived areas (25% of all children living in such areas) - high concentration of risk - compared with 390,000 living in other areas (9% of all children living in such areas) - low concentration of risk.³ In other words risks, may be concentrated in some areas, but they are likely to occur everywhere. Critics of educational priority area policy in the 1970s pointed out then that far more disadvantaged children were outside the EPAs. than in them: it was argued that area-based targeting was based on an “ecological fallacy” (Bernstein and Davies, 1969). Ameliorative policies were better directed at the individual child and his or her family.

4. Origins of early education problems

4.1 It has long been established that disadvantaged circumstances in childhood adversely affect school performance later. The 1946 birth cohort study supplied some of the early evidence on this and in such books as *The Home and the School* also identified parents’ aspirations as important factors in children’s educational development. (Douglas, 1964; Douglas and Ross, 1968).

4.2 Analysis of data from the 1958 and 1970 Birth Cohort Studies, has enabled us to track the origins of children’s educational difficulties, exploiting the full strength of these longitudinal datasets, over much longer periods of time. Through surveys funded by the Basic Skills Agency at age 21 in the 1970 cohort (Bynner and Steedman, 1995) and age 37 in the 1958 cohort (Bynner and Parsons, 1997; Parsons and Bynner, 1998), we were able to assess adults’ functional literacy and numeracy using specially designed tests. These involved such tasks as looking up items in the “Yellow Pages” and working out change in a shop. We classified the adult scores in terms of different levels of skill: ‘very low’, ‘low’ and ‘good’.

4.3 Huge gradients are revealed in the early childhood characteristics that are associated with these different categories. Figures 2a, 2b and 2c give examples of three of them: having free school meals as a child, lack of parental interest in educational progress (rated by teachers), and behavioural problems (rated by teachers on the “Rutter” scale).

(Figures 2a, 2b and 2c here)
4.4 Characteristics like these tend to go together in individual children. So we need to know to what extent each of them exercises an independent effect on the adult basic skills outcomes, i.e. adds something to the prediction of the basic skills scores.

4.5 To find out, multiple regression analysis was applied to the whole set of characteristics identified as related to the adult basic skills problems, building up the picture through the prediction of first 7 years’ scores in cognitive ability, then 7 years’ scores in reading and maths, then at 11 and at 16 and finally up to 21, in the case of the 1970 cohort, and up to 33 in the case of the 1958 cohort. Table 1 shows the picture that emerges from this analysis of the critical components of educational attainment problems up to the age of 16.

(Table 1 here)

4.6 The key characteristics that emerge in the explanation of basic skills problems, are difficult material circumstances in the home associated with low income and Council rented housing, and lack of parental interest and aspiration and support at home for early learning. These are manifested through consistently poor performances in cognitive tests: initially the visual-motor tests such as copying designs, moving through early reading and mathematics right through to school qualifications. Behavioural problems on the part of children and poor school attendance also emerge as significant factors as the children move through primary school and particularly in secondary school.

4.7 The conclusion is that critical elements of pre-school preparation are missed in the case of the children that end up with basic skills problems, especially the constructive play that underpins the development of visual-motor skills, which then impedes early reading.
Without early reading, mathematics development is similarly stunted, throughout the whole of primary school. Such children then enter secondary school well behind their peers and with great difficulties in ever catching up.

Reversing the process

4.8 What factors work can reverse the process? How is it that many children, override their family circumstances and subsequently succeed? Pilling (1990) conducted a study targeted at this group. Building on an earlier study of childhood disadvantage by Essen and Wedge (1978), she selected a sample of adults in the NCDS Survey at age 27, who as children had met all the criteria of disadvantage, yet subsequently had reached the top bands of educational achievement at 16, or who, as adults, had achieved high incomes and high status jobs, and owned their own homes. These were matched with another sample of adults who as children had similarly met all the criteria of disadvantage and had not succeeded in adult life. Both samples were interviewed at age 27, using a mixture of quantitative and qualitative techniques. The main discovery was that the achievers had experienced family cohesion, high parental aspirations and interest in their children's progress, and that their schools had showed 'strong commitment' to them. The earlier the disadvantage occurred, and the longer it had persisted, the lower the likelihood that these factors would counter it. Pilling interpreted her findings in terms of a theory of adaptation and against the idea of a 'culture of poverty' with permanent disabling effects: “those who achieved well are those who maintain their aspirations so that they are able to take advantage of improved circumstances when they arrive”.

5. Behavioural problems in children
5.1 The factors that predict behavioural difficulties in children are very similar to those that predict basic skills difficulties, although the latter are implicated more heavily in the former than vice versa. The main difference is to do with relational factors, first at home and then within school.

5.2 A number of studies have identified children who tend to be most prone to risk in this respect summarised in the Home Office Report, Effectiveness in Reducing Offending and the chapter on “Initiating Offending: Why do Some Young people start to offend?” from Young People and Crime (Graham and Bowling, 1995). Such children are often hyperactive and show impulsiveness and attention disorders (HIA). These characteristics are related to, but distinct from, the conduct disorders of early childhood (Farrington et al, 1990), HIA is typically accompanied by cognitive problems whereas conduct disorders need not be. The existence of these HIA characteristics, which may or may not have a genetic basis, gives part of the explanation of why not all siblings of a delinquent child turn out to have the problems in adolescence which result in delinquency and adult crime (Moffitt et al, 1996; Wadsworth, 1991).

A study based on a New Zealand longitudinal birth cohort study (Silva and Stanton, 1996), distinguished between ‘life course’ persistent and ‘adolescent situation specific’ offenders and examined the early child hood characteristics of the two groups (Moffitt et al., 1996). Figure 3 shows the profile of these characteristics for the persistent delinquent group. The defining characteristics are those to do with temperament coupled with adverse family conditions, low cognitive ability, low self- esteem and low attachment to parents. The situational delinquents showed none of these temperamental characteristics and little
evidence of the adverse family conditions. In other words, much situational delinquency was part of normal growing up even though it could often lead to trouble with the police with ensuing problems from that experience.

(Figure 3 here)

5.3 Another interesting feature of the early antecedents of delinquent behaviour is the effect of family disruption set against that of parental deviance. A study by Michael Rutter and colleagues reported in Robins and Rutter (1990) compared children growing up in care in terms of these characteristics with a control group. The critical factor for both sexes is the family disruption rather than the parental deviance, but especially for girls.

5.4 Such findings are part of a body of evidence suggesting that certain temperamental characteristics in children are often associated with a set of poor family relations, on which pressure is added through the often poor circumstances of low incomes and family breakdown. But is it the breakdown as such which is crucial or is it what leads up to it within the family? A number of studies using 1958 birth cohort study data have addressed questions to do with the origins and consequences of divorce (e.g. Ferri, 1976; Elliot and Richards, 1991; Kiernan, 1997). Elliot and Richards (1991), for example, using NCDS data, demonstrate convincingly that for most developmental outcomes, the problem behaviours precede divorce and relate mainly to the difficulties already going on in the family before the divorce occurred. Kiernan (1995) found that differences in educational and career outcomes were much reduced when pre-existing family conditions were taken into account, whereas early partnership and parenting appeared to connect to the divorce itself. She concludes that “we should be concerned about the conditions that preceded divorce and sometimes lead to
divorce, such as poverty and economic uncertainty, as well with the consequences of marital breakdown.”

5.5 What seems to happen in such families is that children with temperamental difficulties add to the tension already existing in the family, aggravating the negative relations rather than the positive relations which prevail in most homes. The children show low levels of attachment to their parents which weakens further their often already ineffective social controls. The consequence is typically that the child enters primary school ill-prepared. Another set of relational problems comparable to that in the family then follow, but this time between teachers and children. The child’s behavioural problems are a source of stress for the teacher who will tend to exercise every method to minimise the child’s disruptive effects on the other children in the class and consequently appears in the child’s eyes in even more of an authoritarian role. In the other children’s eyes this can bestow somewhat “heroic” qualities on the child in constant conflict with the teacher, which re-enforces the pre-disposition to problem behaviour even more. There is a strong tendency for juvenile delinquents who are convicted for offences to show such characteristics when they were children. They exhibit a form of alienation throughout their school careers which originates in alienation within their own families. In the extreme case as Robins and Rutter (1990) put it:

"a syndrome of adverse outcomes, including crime, substance abuse and marital instability is clearly predicted by a child's anti-social, non-cooperative or confrontational behaviour combined with pathology in the families of rearing, as indicated by parents psychiatric illness, crime and violent and erratic child rearing practice."

6. General conclusions for policy
6.1 The picture that emerges from these studies is one which has often been mentioned in relation to educational difficulties, that of virtuous and vicious circles. There is no predictable linear path to one kind of negative outcome or other, rather a set of mutually interacting circumstances, which go on reinforcing each other in building up what amounts in the case of education to a form of deficit and in the case of behavioural disorders to an accumulated risk of criminality in adulthood.

6.2 The most common theme in the studies reviewed is the critical role of the family, both as creator of the conditions for later maladjustment, and the means by which it can be resisted. The great majority of families, whatever the nature of the parents' own problems, provide the protection and the stimulus to positive development that children need. The problem arises when a set of external circumstances combine with a set of adverse family interactions, and particular child characteristics, to reinforce negative developmental processes rather than to inhibit them. In most cases the continuing risk appears to derive less from any irreversible effect in early life than from continuing disadvantaged circumstances reinforcing and re-cycling the social relations identified with the risk. The possibility of reversing such processes through intervention or change of family circumstances is well demonstrated in such programmes as “High Scope” in the USA and the Basic Skills Agency’s “Family Literacy” programme in England. Twenty years earlier, some of the Education Priority Area initiatives following the Plowden report reached similar conclusions (Halsey, 1972). Key ingredients were home-based strategies, including teaching mothers how to structure and direct play with pre-school children towards cognitive development goals.
6.3 The policy solution therefore needs to be two pronged. First, the earlier intervention occurs through pre-school provision, and then through home-school links, the more opportunity there is to build up a set of relationships around positive developmental processes rather than the negative ones, with the consequent reinforcement of positive outcomes. The second point is that it is never too late to intervene. The amount of unexplained variability in outcome variables suggests that there is a large amount of influence in individual life patterns, that can be exercised right through until adult life. Studies of the life course of adult criminals have shown that relationship changes in adulthood, such as marriage to a non-delinquent spouse, frequently end the delinquent behaviour (Sampson and Laub, 1993). On the other hand, development of an alcohol problem in adulthood for perhaps social or other reasons, can exacerbate the negative conditions on which criminal behaviour thrives. This is often via the route of job loss, unemployment, health problems and marital breakdown.

Three basic issues need to be addressed in carrying such a policy through. The first two relate to strategies - what David Utting describes as the distinction between “geographical” and “developmental” targeting. The third concerns evaluations.

*Area-based (geographical) targeting versus universal provision*

Holistic problems such as social exclusion require holistic solutions through a combination of disciplines and approaches. There are clearly political attractions in the apparent economies

---

4 Reported in the paper by Christine Oliver, Marjorie Smith and Sandy Barker (Institute of Education), *Effectiveness of Early Intervention*, HMT Seminar, 26 February 1998, National Children’s Bureau.

5 *Suggestions for the UK: an overview of possible action*, paper presented by David Utting (Joseph Rowntree Foundation) to the Ministerial Briefing meeting sponsored by HMT and Joseph Rowntree Foundation, 11 March 1998.
gained through targeting geographically where there are high levels of vulnerability, e.g. the run down housing estate. On the other hand, as we have seen, early intervention programmes of this, such as those introduced in the Post-Plowden Educational Priority area Programme, suffered from the ‘ecological fallacy’. Many families in the high risk areas do not need the targeted provision and many families outside the high risk areas need it a lot. Alongside area-based targeting, universal family and child-based policies are always going to be necessary.

*Developmental Targeting: early versus late intervention*

Traditionally pre-school nursery provision has been concerned with child care, whereas primary school has been concerned with learning the basic skills. A staged approach to education would see the early pre-school learning as a vital part of the education process, either taking place in families, where the parents are equipped to provide them, or in nurseries. At primary school itself, good home/school relations are a key factor accompanying the learning that goes on in the classroom itself. Parents need to see themselves as educators playing an integral part in the education process. Where this is not possible, through inadequate facilities or capabilities at home, then additional help is needed for children within school. A notable feature of early education in continental countries is that more early education takes place in kindergartens rather than in primary schools, with postponement of entry to primary school until 6 or 7. Notably, this does not appear to retard children’s educational development: quite the reverse, on the basis of international educational attainment surveys, later entry tends, if anything, to enhance it. It is possible that the lower pupil-teacher ratio in the kindergarten setting has advantages for young
children’s cognitive development, which are lost through early entry into the large classes of the typical English primary school.\textsuperscript{6}

*Evaluation and monitoring*

Intervention without evaluation leads to uncertainty about effectiveness. There has been somewhat of an obsession through national testing with fairly narrowly defined cognitive achievements as the educational outcome of importance. The use of these to judge performance of schools rather than to diagnose and help the individual child overcome their difficulties has downplayed the valuable *formative* function that such assessment can also serve. Even more to the point, focusing on the cognitive at the expense of the behavioural and affective educational outcomes too narrowly defines the purpose of the school curriculum. If children are to gain the maximum protection from the risk of social exclusion then monitoring of their development in these other areas - despite its acknowledged difficulties - is important also.

*Never too early and never too late!*

The main conclusions to draw for policy is that it needs to be two-pronged. The earlier intervention occurs, first through pre-school provision, then through home/school links, the more opportunity there is to build up a positive set of relationships around developmental processes rather than negative ones, with the consequent reinforcement of positive outcomes.

\textsuperscript{6} Reported in paper by Bronwen Cohen, (Children in Scotland) *What do other countries do?*, HMT seminar, 11 March 1998.
But it is never too late to intervene. The amount of unexplained variability in educational outcomes suggests that there is a large amount of fluidity in individual life patterns, which means that they can be influenced right through adult life. Targeting therefore needs to occur at every age and at every stage in life but with the targets determined by the research evidence.

References


Farrington, D, Loeber, R and Van Kammen, WB (1990) Long-Term Criminal Outcomes of Hyperactivity - Impulsivity - Attention Deficit and Conduct Problems in Childhood, in Robins, L and Rutter, M *eds Straight and Devious Pathways from Childhood to Adulthood* Cambridge: Cambridge University Press


Gregg, P and Machin, P (In press) Child Development and Success and Failure in the Youth Labour Market, London School of Economics, Centre for Economic Performance, mimeo


Kiernan, K (1997) The Legacy of Parental Divorce: Social, Demographic and Economic Experiences in Adulthood, CASEpaper, Case 1, London School of Economics and Political Science


Parsons, S and Bynner, J (in press) Influences on Adult Basic Skills. London: Basic Skills Agency


Table 1 Origins and outcomes of adult basic skills difficulties and targets for intervention

<table>
<thead>
<tr>
<th>Life Stage</th>
<th>Critical Factors</th>
<th>Main Outcomes</th>
<th>Intervention Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>pre-school</td>
<td>unskilled family parents’ education poor no pre-school preparation poor housing mother/father does not read to child</td>
<td>visual motor skills weak limited vocabulary no words read</td>
<td>pre-school preparation family disadvantage</td>
</tr>
<tr>
<td>early primary school</td>
<td>visual motor skills weak disadvantaged home background parents’ interest low family support absent parents unqualified child in remedial class</td>
<td>weak cognitive skills reading delayed</td>
<td>primary curriculum family disadvantage family literacy home/school relations individual support</td>
</tr>
<tr>
<td>late primary school</td>
<td>poor home-school relations disadvantaged home background parents’ interest low</td>
<td>reading skills weak numeracy skills delayed</td>
<td></td>
</tr>
<tr>
<td>early secondary school</td>
<td>mathematics poor non-exam stream behavioural problems teacher expectations low</td>
<td>reading skills weak maths skills weak examination prospects poor</td>
<td>secondary curriculum school/class organisation examinations policy home school relations student behaviour teacher expectations</td>
</tr>
</tbody>
</table>
Figure 1a

% of variation in literacy and numeracy scores at 37 explained at different ages for men

% variation explained

<table>
<thead>
<tr>
<th>Age</th>
<th>0</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>30</th>
<th>35</th>
<th>40</th>
<th>45</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure 1b

% of variation in literacy and numeracy scores explained at different ages for women

[Graph showing % of variation explained at different ages for literacy and numeracy scores for women.]
Figure 2a

% receiving free-school meals at age 11

Cohort members by literacy and numeracy at 37
Figure 2b

% parental lack of interest as rated by teachers at age 7

Cohort members by literacy and numeracy at 37

Teacher View of Parental Interest at 7

- Little Interest
- Felt unable to say

<table>
<thead>
<tr>
<th></th>
<th>Literacy</th>
<th>Numeracy</th>
<th>Literacy</th>
<th>Numeracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOTHER'S LACK OF INTEREST</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FATHER'S LACK OF INTEREST</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure 2c

% rated by teachers with a 9+ score on the Rutter behavioural problems scale

Men and women by literacy and numeracy at 37
Figure 3

Delinquency-related variables for Life-Course-Persistent Boys

- Peer delinquency
- Strengths
- Peer attachment
- School involvement
- Self-esteem
- Psychotic Sx
- Anxiety Sx
- Inattention Sx
- Hyperactivity Sx
- Reading
- IQ
- Family relations
- Parent attachment
- Family adversity

Norm for sample boys (Z Scores)