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Educational Outcomes: Adversity and Resilience

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In the context of risk and resilience, the paper attempts to integrate three strands of research: genetic and mental-health factors, the findings of cohort studies and those of other investigations of educational outcomes. A very wide range of factors, many of them related to disadvantage, bear on such outcomes, but none deterministically. Intelligence, conduct and emotional disorders are all found to influence academic achievement to varying degrees, as do a number of aspects of family, school and the wider social environment. Aspects that contribute to resilience are identified, and the paper concludes with a discussion of interventions to enhance resilience.

Introduction

Resilience is defined here, as in the rest of the themed section, as positive adaptation in the face of adversity. It is a process that explains the way in which some individuals achieve good outcomes, despite the fact that they are at high risk for poor outcomes. Risk factors are those variables that signal an increased chance of poor outcomes. Such variables are not necessarily themselves causal but can be so, in which case they may be protective or detrimental. The use of the term 'protective' has been limited by some to those factors that facilitate resilience in people living in adverse circumstances (Rutter, 1981), while others prefer to use the term to describe factors that operate in both high- and low-risk situations (Luthar *et al.*, 2000). Many factors, such as income, intelligence and socio-economic status, have been put forward as acting as positive or negative influences on educational outcomes depending on where, in the distribution of the variable in question, the individual falls.

In this chapter, we shall first consider the influence on academic outcomes of personal and environmental (especially familial and school) factors. We then discuss possible approaches to intervention and system reform to improve educational outcomes for children facing social adversity.

Personal factors

Intelligence

We begin with intelligence because this is the most powerful predictor of educational outcomes, with which it is highly correlated (Bartels *et al.*, 2002). There are numerous definitions of intelligence. Two broad strands appear in most definitions – the capacity to learn from experience and adaptation to one's environment (Gregory, 1987). Although the concept of general intelligence underlying all types of ability may still have some value, it

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is now recognised that it is more useful to think in terms of multiple intelligences. Gardner (1983) has suggested there are six kinds of intelligence – linguistic, logico-mathematical, spatial, musical, body-kinesthetic and personal. The last of these is closely associated with so-called emotional intelligence (Goleman, 1996).

In the first five years of life, the measurement of intelligence is mainly carried out using so-called developmental testing that assesses cognitive development, either generally or in specific domains. Later in childhood, intelligence is measured using IQ tests as well as measures of specific functions, often called cognitive tests. In a study of Dutch 5, 7, 10 and 12 year olds, the correlations between a national test of educational achievement (CITO) and IQ measured by psychometric assessment were 0.41, 0.50, 0.60 and 0.63 respectively (Bartels *et al*., 2002).

There are strong genetic influences on IQ differences between individuals within relatively environmentally homogeneous populations. Monozygotic (MZ) twins, who have identical genetic make-up, are much more similar in IQ than dizygotic twins who only share 50 per cent of their genes. MZ twins who are reared apart are almost as similar in IQ as those who are reared together, reinforcing the suggestion that genes play a significant part in determining IQ level (Bouchard, 1990). Although across the board, genetic influences contribute about half the variance to performance on IQ tests, this varies considerably according to context. For example, Spinath *et al*. (2004) found greater genetic influence on children with mild mental impairment than in those with higher ability. In contrast, Turkheimer *et al*. (2003) found that in children living in low SES families, genetic influences on IQ were negligible compared to those living in affluent families. Further, the relative size of genetic influences appears to vary with age. Plomin and Spinath (2004) report an increase in heritability over the life span.

As there are strong correlations between IQ and educational outcomes, it is not surprising that there is a powerful genetic component to academic achievement. In an Australian sample of 15 to 18 year old twins, it was found that the heritability for the Queensland Core Skills Test was 0.76, suggesting that genes contributed around 50 per cent of the variance in academic attainment (Wainwright *et al.*, 2005).

Many social scientists have concerns both about the study of genetic influences and about the use of IQ tests to predict educational outcomes. While most people are prepared in private conversation to acknowledge the importance of inherited characteristics in explaining, for example, why one of their children is more 'academic' than another, to suggest in public discourse that genetic factors influence academic attainment is to risk causing offence.

Concerns include the idea that the establishment of genetic influences leads to a belief that intelligence and learning are fixed quantities, determined at birth and that remedial measures are a waste of time. In fact, all genetic studies reveal that a sizeable component of intelligence is related to non-genetic (environmental) influences, so there is no reason why environmental interventions should not have a major impact. There are also concerns that genetic studies open the way to suggestions there are inherited racial differences in intelligence. In fact, although such suggestions have been made (Herrnstein and Murray, 1994), the methods used to study individual differences within narrowly defined populations are not appropriate to study differences between populations, so such suggestions are erroneous.

However, deeper understanding of the way genetic influences operate can be positively helpful to those planning and undertaking remedial interventions. An

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individual's genetic make-up has the potential to influence his or her environment. Thus, as one example of gene–environment interaction, a temperamentally alert child may elicit more complex stimulation from teachers and parents than one less easily stimulated. Informed and balanced understanding of such interactions can support parents and practitioners in acting preventively to reduce the impact of developmental risks.

A number of studies have shown the influence of IQ on academic outcomes as a protective factor facilitating the process of resilience both in children at high risk and universally. For example Masten *et al.* (1988) studying 205 children in grades 3 to 6, living in a socially mixed area in Minneapolis, USA, found that IQ was the strongest indicator of grade point average and that there was no interaction of this effect with SES, the relationship held for both high- and low-risk children. In a later article reviewing large numbers of studies examining resilience, Masten and Coatsworth (1998) reported, 'IQ is one of the most powerful predictors of academic success.' In a study of 940 New Zealand adolescents, Fergusson and Lynskey (1996) found that resilient teenagers who did well though exposed to family adversity during earlier childhood were characterised by a significantly higher IQ, a variable negatively related with truancy and school dropout. These authors considered that their findings supported the view that 'at least average IQ is a factor that may increase resilience of children from high-risk backgrounds'. In contrast, Sameroff *et al.* (2003), using a measure of multiple risk to assess social adversity in a group of 13-year olds living in Rochester, USA, found that those with good intelligence in high-risk environments did less well academically than less bright children living in low-risk circumstances. It is likely that the degree of severity of social adversity will affect the importance of all resilience-promoting factors, including intelligence.

Mental health

Most types of psychiatrically defined mental health problem, of which the most common are attention deficit hyperactivity disorder (ADHD), conduct disorder and emotional disorder are associated with poor educational outcomes. ADHD is characterised by inattention, lack of concentration, impersistence and distractibility. For ADHD, genetic influences are paramount (Levy *et al.*, 1997), but conduct and emotional disorders are strongly associated with and significantly determined by environmental factors (see below). The mechanisms underlying the associations between these different types of disorder and educational outcomes have been studied over many years.

It has been established from population surveys that there are important links between ADHD, antisocial behaviour and academic achievement. In particular, findings from the Isle of Wight study (Rutter *et al.*, 1970) established that there is a strong link between antisocial behaviour and specific reading difficulties. It now seems likely that this link is mediated by difficulties in relation to attention. In the absence of attention problems, conduct disorder does not tend to predict scholastic achievement (Rapport *et al.*, 1999). In contrast, ADHD strongly predicts poor scholastic achievement through a dual pathway. The presence of ADHD is associated with low IQ that impacts on classroom academic performance and scholastic achievement. In addition, it is marked by cognitive deficits in memory and vigilance which have a strong effect over time on academic achievement. It follows that prevention or effective management of ADHD through psychological, social and medical interventions will promote the resilience process as far as academic

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achievement is concerned. While there is good evidence that medication is effective in this condition, there is a risk of over-use or inappropriate use and many parents are unhappy with this approach. Non-pharmacological approaches, using parent counselling to improve parental attitudes, encouraging the rewarding of good behaviour and providing consistent structure in child-rearing are gaining in favour, but have not yet been shown to be effective in promoting academic outcomes. Children with ADHD probably benefit from highly structured classroom teaching but again the evidence for the effectiveness of this approach is lacking, though success would have implications for enhancing resilience.

There is a weaker link between emotional disorders and academic outcomes. Much of the association is likely to be mediated by the presence of anxiety that makes the child too frightened to attend school on a regular basis or interferes with learning. Poor academic achievement is however also linked to depression. Some children become depressed as a result of academic failure; others fail in school because, for other reasons, they are too depressed to concentrate on their studies. The links between emotional (internalising disorders) and scholastic achievement are discussed for example by Rapport *et al*. (2001), who found that anxiety, depression and withdrawal contributed to predictions of classroom performance over and above the effects of intelligence.

The categorisation of a child as having special educational needs (SEN) is a strong indication of a poor educational outcome. Thus 60 per cent of children who get no passes at all at GCSE have previously been identified as SEN (Cassen and Kingdon, 2007). For a variety of reasons, there is considerable overlap between children with SEN and those with configurations of characteristics, personalities and capabilities that have been characterised as 'mental disorder'. Some children, those with behavioural, social and emotional disorder (BSED) are categorised as SEN mainly because of the presence of a mental disorder. In addition, children identified as SEN for other reasons have a high risk of suffering from mental disorders.

The most common characteristics leading to SEN identification, and present in children identified for other reasons, are antisocial or conduct disorder and ADHD. Given the diagnostic features of conduct disorder described above, it is not surprising that in a national survey of five- to 15-year old children living in England and Wales, 57 per cent of children with conduct disorder had been identified as being in special educational need compared to 15 per cent with no disorder (Meltzer *et al.*, 2000). Further, 85 per cent of SEN children at Stages 1–5 had a conduct disorder, compared to 3 per cent with no special needs.[1] However, population studies (see above) suggest that poor educational outcomes for children with conduct disorder are largely mediated through their association with ADHD (see above).

In the 1999 survey of child mental health problems in Great Britain, 25 per cent of children with emotional disorders had been absent from school for more than 11 days, a slightly higher percentage than was the case for children with antisocial and hyperkinetic disorders, and much higher than that in the general population (8 per cent). Thirty-seven per cent of children with emotional disorders in the general population had been categorised as SEN, again compared to 15 per cent with no disorder. Further, 42 per cent of children at Stages 1–5 showed emotional disorders compared to 3 per cent with no special needs. Children with emotional disorders are eminently treatable, and successful treatment can be seen as a factor promoting resilience in those affected.

Psychiatrically defined and diagnosed problems are also importantly linked to other aspects of schooling. For example, a three-year follow-up in 2002 of children who had

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been identified as showing a mental disorder in 1999 revealed that the rate of school exclusion in those who had a persistent mental disorder present at the two points in time was 18 per cent compared to 1 per cent of children who had not been diagnosed as having a mental disorder in either survey (Meltzer *et al.*, 2003). The presence of a persistent conduct disorder increased the risk of school exclusion by almost 25 times. Children aged 15 and over with no mental disorder in 2002 were much more likely to still be in full-time education than children with an emotional or conduct disorder (83 per cent compared to 67 per cent). Logistic regression analysis showed that, after controlling for age, sex and other socio-demographic factors, the odds of having left full-time education were increased by around three and a half times for children with a persistent mental disorder present at both points in time. Further, children aged 16 and over with a persistent mental disorder were twice as likely as those with no disorder to have no qualifications (36 per cent compared to 17 per cent).

Environmental influences on the risk of poor outcomes

Poor educational outcomes can be caused by a variety of social disadvantages, including deprived family backgrounds or neighbourhoods, innate or acquired disabilities, stressful experiences or traumas, such as violence or abuse. There are numerous interactions between risk factors, and multiple pathways from them to often quite heterogeneous outcomes.[2]

Rather than being treated as operating independently, the key factors have to be treated within a broad framework that recognises the following elements:

(i) complexity;
(ii) transactional dynamics;
(iii) heterogeneity; and
(iv) multi-level structure (see Feinstein *et al.*, 2008).

By the complexity of risk we refer to the wide range of interactions between elements in how they impact on children and families. There is considerable evidence, for example, that factors such as income, housing, parenting and occupation impact importantly on children's school attainment; but not all children in, say, low-income households will experience negative outcomes: the impact of income may be moderated by the effect of other protective factors, such as parents' education, knowledge or access to wider social capital. What matters is the configuration of circumstances experienced by the child and family, and, as discussed below, how the child responds. The literature tends to emphasise the negative consequences of *multiple* risk, rather than of single risk factors.

The environmental factors that comprise risk and impact on development are not all local to the child. Proximal factors at the micro-level of day-to-day experience, such as parent–child or teacher–child relationships, are themselves constrained and enhanced by higher level, meso- and macro-level social and economic and cultural factors, such as technology, migration, media, policy and economic activity.

We now set out some main aspects of the environment that have been shown to impact on children's development, but the above dimensions of analysis need to be borne in mind throughout.

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Social and economic status

Deficits in cognitive development show up early in the life of the socially disadvantaged child. In studies using cohort data, educational performance in the UK has been found to be strongly linked with differences in cognitive attainment between children measured as early as age three, with a substantial gap on average between children of 'manual' parents and of 'professional' parents.[3] The children of poor parents born in 2000–01 were found to be up to one year behind educationally at age three compared with children in better-off families.[4] But one should not regard these – or any other such findings – as entirely deterministic. There is considerable change in cognitive scores between ages five and ten; though again social and economic status (SES) plays an important part. Between those ages, persistence in low scores was 34 per cent for high SES children, and 67 per cent, virtually double, for low SES children (Feinstein and Bynner, 2004).

Language development is a further factor related to SES: on average a young child in a professional class home will hear every day more than three times the number of words heard by a child in a low SES home; parents in such homes also tend to interact verbally with their children less than professional class parents (Clegg and Ginsborg, 2006). Educational sociology in the UK (for example, Bernstein, 1990) has also focused on the importance for success in school of language codes that are learned in the home and for which deep cultural differences exist, impacting in culturally biased ways on the relationship of students and teachers. The effect of social class varies according to other features of society, not least the extent of inequality. England has one of the highest associations of social class with educational performance among OECD countries (OECD, 2002; Hansen and Vignoles, 2005). Sixty-eight per cent of the children of 'professional' parents obtained five or more A*–C grades at GCSE in 2003, compared with 35 per cent of children with parents in 'routine' occupations (DfES, 2006a; see also 2006b).

The home learning environment

A key feature of children's experience in the early years is the home learning environment: the amount parents read to their children, the number of books in the home, the number of outings and stimulating events children have, the degree to which parents support their children's education in and out of school. In fact, the home learning environment is only moderately associated with factors such as social class and parental education levels; what parents do with their children has a more important impact than their own background or circumstances (Sylva *et al.*, 2004). Further, 'In the primary age range the impact caused by different levels of parental involvement is much bigger than differences associated with variations in the quality of schools. The scale of the impact is evident across all social classes and all ethnic groups.'[5]

The critical role of parenting is noted in a number of studies, especially in helping children to overcome early disadvantage.[6] Although parenting helps with school outcomes, 'it is the "at-home" relationships and modelling of aspirations which play the major part' (Desforges and Abouchaar, 2003: 86). The role of aspirations is clearly brought out by differential ethnic performance, in which culture plays a considerable part (Cassen and Kingdon, 2007, and literature cited there). Nevertheless, even these strongly supported findings have to be seen as mediated by the child. Parenting is influenced by the child's characteristics and behaviour from early stages and throughout child development.

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In some contexts, parents' education has been found to be the strongest factor in the intergenerational transmission of social exclusion, though this is unlikely to be the case universally (Hobcraft, 2000, 2002, 2003). There are important interactions between income, wealth, education and occupation and between them and the character of parenting that make it difficult to tease apart unique, causal relationships. Nonetheless, it is clear that the education of parents is strongly associated with mediators of school achievement (Feinstein *et al.*, 2008). The forms of child–parent interaction that are supportive of school achievement tend to be more frequent when the parents are more educated and of higher SES (Desforges and Abouchaar, 2003).

Family factors, such as parental marital disharmony, parental separation and divorce, parental mental illness, and harsh, abusive methods of child-rearing, are all associated with child mental health problems, especially conduct disorder (Rutter *et al.*, 1998). Consequently, insofar as conduct and emotional disorders are implicated in academic failure, family factors must be seen as at least partly indirectly responsible. Although outside the scope of this chapter, factors that protect against the development of conduct disorder in situations of family adversity can also be seen to promote resilience in relation to academic outcomes (Rutter *et al.*, 1998).

The school system

The schooling system is another source of disparities in achievement. Britain has a relatively high degree of social segregation in schools compared to other countries (Jenkins *et al.*, 2006). Disadvantaged pupils, as measured by free school meal (FSM) eligibility, are disproportionately represented in worse performing schools (Cassen and Kingdon, 2007). Early disadvantage can continue in primary school if reading and writing problems are not addressed, as all too frequently they are not (Burroughs-Lange, 2006). A pupil with SEN may not receive the support which policy prescribes (House of Commons, 2006), and together with other less well-performing pupils may suffer from the effects of schools' pursuing their position in national league tables.[7] Selection into less well-performing schools also has a particularly negative impact on SEN students. Poor neighbourhoods can also contribute negative influences additional to those of home and school (Lupton, 2004).

The effect of initial disadvantage continues through schooling: Feinstein (2004) has shown that children of lower social class in both the 1958 and 1970 cohorts were less likely to progress with good performance from whatever point they reached in primary or secondary school compared with others who reached the same point. The same is true of FSM children in more recent data (Cassen and Kingdon, 2007). The effect of social class is not a 'one-off' at the start of schooling but is compounded throughout school life. Nevertheless, many escaped from lower achievement categories.

Schools can provide children with positive or negative experiences. Negative experiences can come from bullying, low expectations on the part of teachers, or disruptive behaviour by some pupils, which damage the learning environment for others. Positive experiences will come from schools which provide children with a welcoming, stable and stimulating environment. There is a considerable literature on the transition from primary to secondary school, which can be difficult for vulnerable children (Galton and Willcocks, 1983; Galton *et al.*, 2003). They may be changing from a friendly

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primary school with close teacher and personal relationships to a much larger and more impersonal secondary school, where they have numbers of different teachers and entirely new social relationships to form with other pupils. Schools, which manage this transition well, will enhance children's resilience. The 'schools-within-schools' movement in the US has attempted to achieve this by making smaller units within large secondary schools. They have been found to improve attendance and pupil performance, though drawbacks are also seen (cited in Raywid, 1996). Research in the UK suggests such 'downsizing' may be particularly supportive for vulnerable children (Wetz, 2006).

Other positive features of schools that could contribute to resilience include pupil participation, greater opportunities for pupils to make supported choices, and close attention to individual pupils' needs. 'Participation' is essentially a term for giving pupils a voice in the planning, content and evaluation of their learning. Experience suggests that pupil participation provides numerous benefits, including improved discipline (DfES, 2004). An egalitarian ethos is a characteristic of schools which make efforts to ensure the progress of all their pupils; it is not universally present in English secondary schools – indeed it has been argued that some aspects of current school 'league tables' discourage it. Schools can and should assess each child's potential and encourage each child to reach it.

Interventions to promote resilience

The concept of resilience implies the presence of adversity. Discussion of interventions to promote resilience should surely begin with a consideration of ways in which the numbers of children experiencing personal, social and economic adversity might be reduced. In theory, at any rate, one should only need to consider promoting resilience when adversity is unavoidable.

The adversities affecting educational outcomes unfavourably that have been discussed in this chapter are so varied that it is not possible to give a comprehensive account of possible interventions. We are therefore giving a number of examples that seem to us most salient in the current British context.

Measures aimed at families

Poverty and social inequality. The UNICEF Report (2007) overviewing child well-being in rich countries targets the United Kingdom as having one of the highest rates of relative income poverty, ranking 20th out of 24 rich countries in this respect. Given the degree to which social and economic status is associated with educational disadvantage, it seems highly likely that reducing child poverty would have a significant impact on rates of educational failure. All political parties are signed up to ending child poverty – the problem is the level of commitment required to find significant resources to achieve this end.

Targeted home support to vulnerable families. Well-validated interventions, such as those that involve sending nurses into high-risk families, would seem to have a good chance of success (Olds *et al.*, 2007). Such interventions have been shown in the United States to reduce the likelihood of criminal behaviour, a variable strongly negatively associated with academic outcomes, as long as 15 years after the intervention has ceased. Early

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support to mothers to reduce financial and other stresses increases the likelihood that their infants will be brought up in a warm, positive atmosphere. Such support together with effective parent management training that emphasises the needs of young children for stimulation appropriate to their developmental level and temperament will enhance intelligence. If this kind of training encourages the use of positive reinforcement for good rather than punishment for unwanted behaviour, it will also increase the likelihood of better academic outcomes partly through the promotion of temperamental characteristics conducive to academic success.

Support for vulnerable children. There is a very high rate of school failure among children in public care and those with special educational needs. Evidence suggests that while policy in the UK lays down standards and criteria for support, such support is often partial or absent (House of Commons, 2006).

Measures for schools

Remedial education. Universal or near-universal achievement of an age-appropriate level of literacy is vital in that failure to achieve such a literacy level militates against much of school learning. It can also be a factor in children's behaviour – frustration due to inability to read can have long-term consequences for children's educational motivation. Teaching children to read is therefore one relatively independent policy intervention that needs little further justification: it is at least a necessary condition for most educational achievement. The level of reading failure in English primary schools is far higher than it should be. Such failure has been shown to be strongly related to later outcomes (Cassen and Kingdon, 2007), while there are well-researched methods that could reduce poor reading to far lower levels, if only financial resources were made available to implement them on a national scale (see for example Burroughs-Lange, 2006).

Effective, universal personal, social and health education (PSHE). At the present time, PSHE is not part of the national curriculum and is almost entirely delivered by teachers untrained in the subject. One central theme involves helping pupils to cope more effectively with the adversities they are currently facing and will face later in life. The development of coping skills to enhance resilience should be a much more widely accepted and better resourced component of the school curriculum.

Personalised classroom learning. One of the main messages in this chapter has been the importance of a high level of intelligence to overcome adversity. Children in a single classroom will inevitably vary widely in their capacities to learn. Indeed, in a situation of relative social homogeneity, there will still be great variation depending on the genetic endowments of each child and on other factors. Further, children's abilities will vary depending on the tasks with which they are faced. It has been claimed that personalised learning aimed at meeting the needs of all groups of children promotes resilience, particularly by enhancing the performance of children living in adverse social circumstances (Dean, 2006).

Selection policies. Making school selection less adverse to low achievers would be beneficial, especially for SEN pupils; changing government-imposed school targets to reduce their inimical effects would further help the disadvantaged (Cassen and Kingdon, 2007).

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School funding. The role of school funding has been controversial in the past, but evidence now suggests that resources can make a difference, especially for disadvantaged students; they must, however, be targeted to problems specific to schools and students.[8]

Engaging parents in interaction with schools. Parents continue to be important to their children's education after early childhood, not only in home activities but in their relationship with their children's schools. Indeed the research survey by Desforges and Abouchaar (2003) identifies this relationship as exceptionally significant; encouragement of the relationship by schools is an important part of policy interventions.

Conclusion

There is, unfortunately, no shortage of adverse circumstances in which children find themselves. Through complex pathways, some of which this chapter has attempted to survey, this disadvantage often leads to educational failure. But there is nothing inevitable either about the number of children experiencing adversity in the first place, or the strength of the links between adversity and educational failure. Interventions through families and schools can reduce disadvantage and promote resilience among children.

Notes

1 These 'Stages' are not Key Stages, but the steps in progression of special needs. They are: Stage 1 – Class teacher or form/year tutor has overall responsibility; Stage 2 – SEN coordinator takes the lead in coordinating provision and drawing up individual educational plans; Stage 3 – External specialist support enlisted; Stage 4 – Statutory Assessment by Local Education Authority (LEA); Stage 5 – SEN statement issued by LEA

2 A comprehensive account is given in Schoon (2006).

3 Feinstein (2003). The findings are for the 1970 birth cohort. See also Melhuish *et al.* (2001).

4 Millennium Cohort data for England and Wales, Hansen and Joshi (2007).

5 Desforges and Abouchaar (2003). Sylva *et al.* (2004) also cite a US study showing that pre-school education can outweigh the effects of social disadvantage. See further Bynner (2001). Further conclusions from a range of US experience can be found in Schweinhart (2003).

6 There is a further survey in Sinclair (2007). And this is a conclusion of Blanden (2006). Pilling (1990) found either a teacher or a parent to be crucial for children who 'escape from disadvantage'.

7 Cassen and Kingdon (2007) cite four studies indicating the adverse effect of the 5A*–C GCSE target. This is 'triage' in secondary schools, whereby resources are concentrated on the pupils on the borderline of 'C' grades in their GCSE exams, at the expense of high-fliers and low-achievers.

8 Cassen and Kingdon (2007), and further research cited there. DfES/HM Treasury (2005) gives a wealth of information on how school funding functions in practice.

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