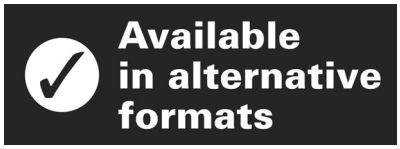
What makes parenting programmes work in disadvantaged areas?



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What makes parenting programmes work in disadvantaged areas?

The PALS trial

Stephen Scott, Thomas O'Connor and Annabel Futh

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We are grateful to the Joseph Rowntree Foundation (JRF), not only for funding the evaluation of the programme, but also for then granting an extension so that greater numbers could be recruited, thus allowing a unique look at ethnic variations. Susan Taylor was instrumental in enabling this to happen and we thank her for her continued support. We are also grateful to JRF for funding a review of parenting and child outcomes by the first two authors – this was drawn on in our introductory section, which was able to be wider in scope because of the work undertaken.

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Introduction and background

Ensuring that a child is brought up experiencing warmth, love and encouragement within safe boundaries is far harder for parents who live in the stressful conditions found in poor neighbourhoods. Children raised in poverty do less well than children raised in more favourable circumstances on a range of measures of attainment and quality of life. Yet, if the emotional quality of a child's upbringing is good, then the evidence is clear that children can succeed despite starting in less favourable conditions. This report describes an evaluation of what factors make an intervention effective in helping parents in one of the poorest parts of Britain give their children a better start in life.

This study investigated the factors that affect the impact of an intervention programme for parents of five and six year olds, and was called the Primary Age Learning Study (PALS). The aims of this study continue the tradition of other studies published by the Joseph Rowntree Foundation (JRF) on related topics, including recently *Routes out of Poverty: A Research Review* (Kemp *et al.*, 2004), *Migration and Mobility: The Life Chances of Britain's Minority Ethnic Communities* (Platt, 2005) and *Anti-social Behaviour Strategies: Finding a Balance* (Millie *et al.*, 2005). However, while most JRF studies are observational, this study is one of the few that is an evaluation of an intervention; for example, it follows the evaluation of three 'Communities that Care' demonstration projects (Crow *et al.*, 2004). It is only the second we know of that is a randomised controlled trial, which is by far the surest way to determine effectiveness; the other was the study of the outcomes and costs of Home-Start support for young families under stress (McAuley *et al.*, 2004). The support given in Home-Start was very well received by parents, although it did not show any impact on parenting or child outcomes during the time period of the study.

Ten questions asked by the study

1 In a highly disadvantaged area, what proportion of children is at risk of social exclusion due to antisocial behaviour?

2 What proportion of parents take up the current NHS-run services for child and family difficulties?

3 What proportion of parents will take up a new school-based programme designed to help them develop their children's behaviour and learning? What is its cost?

4 What reasons will be given by parents who do not attend, or who start but then give up?

5 Will the programme be accessible and acceptable to minority ethnic parents?

6 Will there be differences among ethnic groups in parenting styles?

7 Will the programme change the parents' style of relating with their child?

8 Will there be differences among ethnic groups in response to the programme?

9 Does the number of sessions that parents attend affect how much change is seen?

10 Will the children's behaviour change and their reading ability?

Parenting in poverty

Several factors that both make the task of parenting more difficult and are associated with negative outcomes for children are more prevalent in poor areas. Lack of money has many consequences, including buying goods for personal needs, labour-saving devices, breaks away, childcare and transport, to name but a few; of course, there is also the worry and strain that derive from the uncertainty of meeting these needs and wants. Then aspects of the *community environment* can lead to strain – for example, crowded housing, restricted access to playgrounds and parks and gardens, a threatening neighbourhood, lack of community support, a sense of isolation in general, and specifically in relation to sharing childcare and activities; poor schools with high turnover of staff, low standards and a lack of discipline; lack of reasonable-quality childcare provision for younger children so parents can work. Then stressful *family* characteristics are more commonly found in poor areas – such as being a lone parent, experiencing domestic violence, parents suffering from mental health problems such as depression or alcohol/drug dependence. Certain child characteristics can make parenting far harder and more stressful, notably having a temperamentally difficult child who is prone to be more hyperactive and aggressive. Such children test their parents greatly, and some parents living with children like this have described it as 'being under siege' (Webster-Stratton and Herbert, 1994). Each of the factors described above is associated with no-optimal parenting and parent–child interaction quality, and is more common in poor areas (Ghate and Hazel, 2002; Meltzer *et al.*, 2003).

The experience of black and minority ethnic parents in Britain

Parents from ethnic minorities may have additional stresses. Those who are well established may nevertheless experience racism and discrimination across several contexts, from being out and about in public, to being turned away from favourable employment, to less satisfactory services from schools and the NHS. Those who have arrived more recently may additionally struggle with language difficulties, lack of information about how to access services and benefits, and isolation. Parenting styles that fit familiar circumstances in the country of origin may be challenged by the new settings in Britain, for example living in flats in the inner city; some disciplinary practices may be frowned upon. Equally, there may be more cohesiveness and closer supervision of children that help the well-being of the parents and confer advantageous benefits in higher-risk urban conditions.

Reasons why some children raised in poverty do less well

The reasons children raised in poverty do less well are many and go beyond simply the amount of money a family has, important though this is. The Christchurch, New Zealand study (Fergusson *et al.*, 2004) followed nearly a thousand children from age two until 30. Those living in poverty manifested higher levels of several characteristics associated with worse outcomes. The characteristics of the child that predicted low functioning and social exclusion included antisocial behaviour, hyperactivity and inattention, inability to make friends with other children and lower intelligence with poor attainment at school. In the family, major predictors were inappropriate parenting; once these factors were accounted for, having a low income or living in a run-down neighbourhood had a considerably smaller effect. Other studies report broadly similar findings (Sampson, 1997).

Ways to intervene

Many of the financial and community factors that make good parenting difficult require action at a political level, for example developing better housing stock, improving schools and providing more income support. Some of the family factors and child factors require specific courses of action for affected individuals, including, for example, suitable interventions for parental depression or child Attention Deficit Hyperactivity Disorder.

Improving parenting offers an attractive path to better child outcomes, since it is strongly associated with them. However, a word of caution is necessary since poor parenting may also be a *marker* of difficulties the child would have anyway and may not always be causal. Thus, for example, children who inherit difficult temperaments elicit harsher parenting, even when they are adopted early (O'Connor, 2002). Thus, it is by no means certain that improving the parenting style would automatically lead to much better outcomes, desirable though it may be for its own sake. The link between parenting styles and child outcomes is more fully discussed in the review by O'Connor and Scott (2006) commissioned by the Joseph Rowntree Foundation.

Parenting and child outcomes

The links between positive parenting and child well-being and learning

Parental sensitive responding and secure child attachment

According to attachment theory, from early infancy the capacity of parents to respond in a sensitive way to their child's overtures and needs is crucial to the development within the child of a secure attachment to the parents (Bowlby, 1969). The child 'internalises' his/her experiences with the parent and forms a model of him/herself as lovable, and as others as loving and reliable. These processes, in turn, are associated with a growing child's ability to make other relationships successfully, such as with friends, and, later, intimate love relationships. Children who display all insecure attachment patterns also show more emotionally dysregulated, disruptive behaviour, and those with disorganised attachment show especially high rates of aggression (DeKlyen and Speltz, 2001). While the early focus of attachment theory was infancy, it has been increasingly recognised that such a parenting style is important for good child functioning in middle childhood (Shouldice and Stevenson-Hinde, 1992) and beyond.

Scores of trials attest to the effectiveness of interventions in increasing maternal sensitivity in infancy and have shown that this in turn increases child attachment security (Bakermans-Kranenburg *et al.*, 2003). However, there have not been any trials that see whether this can be improved later, in middle childhood. Because new ways have now been developed of measuring sensitive responding in middle childhood (Matias, 2006), this study examined whether a widely used parenting programme affects this broad style of relating, rather than just teaching some behavioural and disciplinary techniques.

Parental encouragement and child adjustment

Positive parenting promotes child adjustment in terms of their being able to make good relationships with adults, siblings and friends, concentrate better and be less aggressive (Gardner, 1987; Petit *et al.*, 1997). In moment-to-moment daily living, encouragement includes paying attention to a child and praising them for their day-to-day achievements and for trying. The promotion of this style of parenting is a major component of the parenting programme evaluated here.

Parental involvement of the child in joint activities and educational attainment

Parents who are involved with their children take part in joint activities with them, such as playing games, involving them in activities of daily living such as preparing and clearing meals, discussing how school is going (including showing some interest in homework set) and communicating with them generally about what is going on. This has a marked association with child educational attainment, as extensively reviewed in the recent DfES report by Desforges and Abouchaar (2003). A conclusion from this report was that, in order to raise the attainment of 'working-class' children, it would be more effective to boost the relationship quality and involvement level of the least involved third of parents up to that of the most involved third of parents than it would be to reduce class sizes. The programme used in this study included a specific element to promote parents reading with their children, as well as becoming generally involved through play and joint activities.

The links between negative parenting and child disturbance

Harsh, inconsistent discipline and other styles associated with disruptive behaviour

A parenting style characterised by harsh, unpredictable discipline is strongly associated with defiant, antisocial behaviour and, later, with criminal outcomes (Patterson *et al.*, 1992). In looking at the parenting styles of children who later became delinquents, Farrington *et al.* (1998) found four attributes that were significant in addition to harsh, inconsistent discipline – namely, high criticism, low warmth, low involvement and low encouragement. In high-risk environments, as children become teenagers, close supervision of a teenager's whereabouts is an important aspect of parenting and firm control may help protect them.

Ethnic and cultural variations

There is a rich diversity of approaches to bringing up children worldwide at any given time, and also large changes over time within cultures (LeVine *et al.*, 1988). The impact of these in children is not necessarily clear and will also depend on the cultural context (Posada *et al.*, 2004). Most studies of parenting styles have been on white populations, so there is a need to gather information on ethnic variations, especially where these coexist within the same location.

For this study, we wished:

1 to see whether there were indeed ethnic differences in parenting practices

2 not to prejudge their effect on children, but to examine empirically which parenting practices were associated with child functioning

3 to leave as an empirical issue the question whether or not the intervention would work on a cultural group for whom it had not been explicitly designed – both the assumption that a western-designed programme would be 'right' for parents from different cultures and the assumption that it would be inappropriate, and hence 'wrong', should be put to the test by seeing what actually happened.

Antisocial behaviour as an index of parenting difficulty and child need

Antisocial behaviour is a good marker of a child failing to do well. It does *not* necessarily imply that the parents are at fault, but is a good marker that, for whatever reason, parenting is likely to be stressful. The emotional toll on families and siblings is considerable (Webster-Stratton and Herbert, 1994).

Children who display persistent excessive antisocial behaviour lead impoverished lives, being seriously impaired in both their relationships and their attainments. The sort of behaviours displayed include tantrums, refusal to accept instructions, destruction of property, taking other people's possessions including stealing, physical hitting and verbal aggression, rudeness, lying. The problem is common – when defined as oppositional-defiant/conduct disorder, it affects 5 per cent of the population in the UK (Ford *et al.*, 2003). The affected individuals do badly on most indices of success in life – the children are unhappy and have low self-esteem (Harter *et al.*, 1998), evoke criticism and hostility at home, and have few satisfactory

relationships or genuine friends (Pope and Bierman, 1999; Shortt *et al.*, 2003). At school they do poorly, typically leaving with no qualifications despite having adequate intelligence (Fergusson *et al.*, 2005). There is strong continuity to adulthood criminality, domestic violence, drug and alcohol misuse, unemployment and ending up as an adult living in poverty (Rutter *et al.*, 1998; Krohn *et al.*, 2005). A substantial proportion go on to develop antisocial personality disorder (Loeber *et al.*, 2002; Simonoff *et al.*, 2004). Moreover, the prevalence of criminality and violence in the UK and western countries has increased markedly in recent decades (Collishaw *et al.*, 2004).

Public cost of antisocial behaviour

The cost to the public of child antisocial behaviour is substantial. One recent large population-based follow-up study of children aged ten found that, by age 28 years, those who had conduct disorder in childhood had gone on to cost society ten times as much as controls (Scott *et al.*, 2001b). The greatest costs were borne by criminal justice agencies, but many others made substantial contributions, including education, social services and health. Few individuals were in regular gainful employment and making a positive financial contribution in terms of the balance between paying taxes versus receiving benefits. In the USA, Aos (2002) calculated that a teenager with criminal tendencies costs US $1.5 million.

Therefore antisocial behaviour is a good index of likely parenting difficulty and detecting children with it is important, since they are at risk of social exclusion both in childhood and in later life. Moreover, if an intervention can improve parenting, they are especially likely to benefit.

Interventions to improve parenting

The UK policy context

Since its election in 1997, the current UK Government has put parents and children high on its agenda (Quinton, 2004). The SureStart initiative with other early years policy cost £1.8 billion from 1998–2006. The approach taken has been to offer fairly intensive ‘wrap-around’ services to relatively few (now 500) geographically defined communities of a thousand or so families living in the most deprived neighbourhoods in England, targeting children from birth to three. Alongside this strong interventionist

approach is a fairly laissez-faire attitude to what services are provided and the independent evaluation has been disappointing (Melhuish *et al*., 2005). This project took a mixed approach to prevention, by being placed within a geographically defined high-deprivation neighbourhood. Although there was open access, those with higher need were more strongly encouraged to attend.

Suitability of child antisocial behaviour as a subject for prevention

Children at risk of antisocial behaviour and later social exclusion meet many of the criteria that make a targeted prevention attractive. First, the children can fairly reliably be identified early on (by a behaviour questionnaire); this would be much less true, for example, for children who will go on to become depressed as adults. Second, because effective interventions are available, such as certain (not all) parenting programmes, detection can lead to a major difference; this would be less true of, say, autism, which is harder to treat. Third, the later damage of having the full-blown condition is expensive, both for the young person and society – antisocial behaviour and socials exclusion are personally very limiting and costly for the public, as noted above. Fourth, there are no very effective later interventions once the condition is full blown – established social exclusion or delinquency is hard to put right. On all these four criteria, offering parenting programmes fairly early on in a child's life is a good candidate for effective early intervention programmes.

Parenting programmes

The parent–child relationship improvement programmes that were originally shown to be effective were initially called 'parent training' programmes. These are the most widely researched psychological intervention for antisocial behaviour in child mental health (see reviews by Barlow, 1999; Scott, 2002; Kazdin 2005). They have been shown to be effective for over 30 years, during which time the underlying rationale has broadened from straight behaviourism to encompass themes that include parental narratives and how parents label emotions and negotiate with each other. Yet, despite the effectiveness of parenting programmes, the majority of UK families will not have access to those that have been shown to work. Further information about parenting programmes currently used in the UK is given in the excellent review by Helen Barrett (2004).

The Webster-Stratton Incredible Years programme, which was used here together with a literacy programme doesn't only emphasise behaviour, it also emphasises the need to acknowledge 'feelings first' (Webster-Stratton and Hancock, 1998). Thus, if a

mother states that she has had a horrible week trying to cope with her son's tantrums, the therapist is encouraged to acknowledge the feeling component instead of immediately diving into a detailed description and seeking solutions. The underlying notion is that parents cannot think freely about solutions until feelings that are overwhelming are processed – indeed this represents the practical application of what research on parenting has demonstrated for many years. Thus the approach is to offer both emotional support and skills with which to improve the relationship with the child. With this approach, not only do child outcomes show a large effect size, but also there is high consumer satisfaction and low drop-out rates (Webster-Stratton and Hammond, 1997; Scott *et al.*, 2001a).

The JRF recently funded the evaluation of another parenting programme that offered support only, Home-Start (McAuley *et al.*, 2004). Here, isolated, stressed families were offered home visits with a sympathetic ear, and often some respite activities (e.g. taking the children out to play while the mother had a lie down). The intervention was given by volunteers, who did not attempt to impart child management or relationship building skills. Despite receiving on average 95 hours each of intervention (typically given as weekly visits of two-and-a-half hours), there was no difference in measured mothers' well-being or child outcomes. Thus, although the population was one of undoubted need, who much appreciated the support offered, the programme did not appear to improve maternal or child functioning, despite a substantial 'dose'. This may have been because little attempt was made to change the relationship with the child. Also, while there were no short-term effects, it is possible there may be effects seen later on in child development.

Prevention trials

Prevention trials, however, have had mixed success compared to treatment programmes for established problems. Thus, for example, that by Barkley *et al.* (2000), despite lasting a year and including a special school, had no effect. The Fast Track project (Conduct Problems Prevention Research Group, 1999) was a 'state-of-the-art' multimodal intervention study with a huge input of resources covering several risk factors. However, the outcomes were modest, with small effects. Regardless of the eventual outcome, such a comprehensive, prolonged and intensive intervention is likely to be too expensive to replicate on a large scale. We therefore wished to try out a programme that was more modest in scope, but that would be more likely to be widely disseminated if effective. To engage a high number of parents, and to help develop children's scholastic skills as well as social ones, it occurred to us to include a reading element, whereby parents could help encourage and bring on their children's reading skills.

Effectiveness in real-life settings

Despite the large number of evaluations, the vast majority of studies of parenting programmes have been carried out:

1 by the developers of the programme

2 in the USA

3 in specialist university clinics

4 using highly trained staff whose main task is to deliver the particular programme

5 taking referrals selected as appropriate and suitably motivated to attend the lengthy programme.

In marked contrast, evaluation of outcomes for usual services delivered in 'real-life' clinics show little if any effect (Weisz *et al.*, 1995). The reasons for the discrepancy between efficacy studies and 'real-life' effectiveness studies are multiple and include the converse of those set out above. There is therefore a need to see whether parenting programmes can be effective under difficult 'field' conditions.

Parenting and reading

Although a number of trials have shown that extra tuition from trained teachers can improve reading skills, e.g. the Success for All programme devised by Robert Slavin (Borman *et al.*, 2005) and the Reading Recovery programme devised by Marie Clay (Pinnell 1994), training parents to read with their children has been less well studied. A small trial (Tizard *et al.*, 1982) showed useful gains, but two attempted replications failed (Hannon, 1987, 1995). The trials by Kellam *et al.* (1993) have attempted to disentangle whether interventions to reduce antisocial behaviour might on their own lead to improved reading, or vice versa, but with inconclusive results. However, adding a reading element to the parenting programme that we planned to use seemed justified because of the strong association in longitudinal studies between parents' reading with children and their intellectual attainments (e.g. see Desforges and Abouchaar, 2003), and the link between poor reading and poor social functioning and criminality later in life (Maughan and Hagell, 1996).

Previous work by our group leading up to this trial

To address the issue of whether parenting programmes work in real-life UK settings, Scott *et al*. (2001a) conducted a controlled trial of 141 seriously antisocial three to eight year olds referred to regular NHS Child and Adolescent Mental Health Clinics. Parents were allocated to receive the basic 12-week Incredible Years (Webster-Stratton) programme or to act as waiting list controls. They were seen in their local clinics and attended groups run by staff from a range of disciplines. Antisocial behaviour improved by 1.06 standard deviations (a large effect) on semi-structured interview, and direct observation confirmed a more positive and effective parenting style. Drop out was 18 per cent, considerably lower than the 45–65 per cent found in the review of parenting programmes by Pekarik and Stephenson (1988). The cost, at £571, was no greater than conventional treatment lasting six sessions. This study suggested that certain parenting programmes can be highly effective under real-life clinical conditions.

Next, we conducted a prevention trial in eight inner-London primary schools. This selected five- and six-year-old children above the 18th percentile for antisocial behaviour, whose parents were offered the Incredible Years programme plus our in-house reading programme (together called SPOKES, Supporting Parents on Kids' Education in Schools). In a randomised controlled trial, this reduced antisocial behaviour by 0.5 standard deviations (sd), hyperactivity symptoms by 0.3 sd and parenting improved by 0.45 sd (Scott *et al*., 2006b, forthcoming). Strikingly, reading improved by 0.35 sd, which meant a gain in reading age of six months for the children when they were six years old. That trial was population-based, preventive and differed from previous trials by adding an element to address child reading. The parents were offered 26 sessions over three terms and the average attendance was 14.

How this trial differed from the previous work

The PALS trial was planned to differ in three crucial respects, in order to discover what factors might affect effectiveness and save cost. First, the intervention would be *shorter*, with only 16 sessions offered, instead of 26 (nonetheless, parents in the previous trial attended just over half of the sessions offered). Second, in addition to targeting the intervention at children shown on the screen to have a degree of antisocial behaviour, half the places would be *offered to anyone* who wished to come, whether or not their child had difficulty. This would allow us to see whether the intervention was equally effective in families with few difficulties. Third, it would be offered in an area where the population was predominantly from *ethnic minorities*, so

it would test out the attractiveness and usefulness of the programme with a population whose needs and concerns have not been subject to many in-depth quantitative studies of this kind in the UK before. There are concerns that traditional services fail to reach minority ethnic populations fairly and equally, so we wished to address this.

2 Methods

Setting

The trial took place from 2001 to 2004 in four primary schools either side of the Old Kent Road in Peckham, London, which is the most disadvantaged ward within Southwark, which in turn is the third most multiply disadvantaged of 150 local authorities in England. The schools have been selected to be given the intervention by the local authority because of the high level of need.

Design

This was a group randomised controlled trial, with random allocation of classrooms to be either intervention classes or control group classes by a statistician independent to the project. There were four schools with a total of eight classes over three years, thus a total of 24 classes were randomised with an average of 28 pupils each giving the 672 children in the study. Randomisation was at classroom level, rather than by individuals within it, so that all members of the class could be offered the new programme. In the previous trial, some individuals within the classes were disappointed that they had randomly been excluded from getting the intervention. The hope in this trial was that, if a whole class was not offered it, the upset would be less, especially as it was explained there were insufficient resources to offer it to both classes in the infant schools involved.

It was a two stage study, with:

1 screening of all reception and year one pupils for levels of emotional and behavioural difficulties by parent and teacher completed questionnaire

2 in-depth measures of selected cases stratified according to high or low level of need – measures to be taken prior to the start of the intervention group, six months later (within two months of the end of the groups) and one year later, the latter thus allowing several months to elapse between the end of the intervention and the follow-up assessment.

Consent

It was explained to parents selected for the randomised controlled trial that the study would require a substantial commitment of time and that all the information given would be confidential. Written consent was obtained from each participant; the local research ethics committee approved the project.

Interventions

Parenting programme

Overview

This was an abbreviated form of the SPOKES (Supporting Parents on Kids' Education in School – Scott *et al.*, 2006b, forthcoming) programme. The programme lasted one-and-a-half school terms and ran over 18 weeks. It comprised the basic 12-week Incredible Years parenting programme (Webster-Stratton and Hancock, 1998), combined with an abbreviated, six-week version of our in-house reading readiness programme for parents to use with children (the original lasted ten weeks – Sylva and Crook, 2005). Parents of eight to ten children were invited to attend a group for two-and-half hours in the morning after dropping their children off at school.

Personal development element

This was the Incredible Years (IY) school-age videotape parenting programme, which addresses child behaviour and the parent–child relationship. The focus was on how parents could bring the best out of their child, rather than how they had got it wrong. The people depicted in the videotapes come from a variety of ethnic groups, including white, African-Caribbean, Asian, Hispanic and others. The videotape scenes show parents and children in a variety of common situations, with the parents sometimes behaving in a way that leads to the child being calm and obedient, and sometimes in a way that leads the child to be miserable and to have tantrums. Through careful observation and group discussion, the elements of parental behaviour that led to successful child outcomes were drawn out. Then parents practised the new techniques in role plays of their own situation, with another group member cast as their own child. They were instructed to practise the new skills at home, and were telephoned by the group leader mid-week to check progress and solve difficulties.

The first six weeks of the programme concentrate on how to promote desirable child behaviour and constructive activity. Parents practise techniques to facilitate play with their child, and to promote the child behaving in a sociable, imaginative and calm way. The second six weeks focus on handling misbehaviour, and include a range of techniques to enable the parent to lay down fair, workable rules and enforce these firmly and consistently, without recourse to sudden fits of temper and violence. The emphasis throughout is on making it clear to the child what the consequences of their actions will be, with the parent following through by applying those consequences consistently but calmly. In this way the child should learn to take responsibility for their actions, because, if they behave in a constructive manner, they reap considerable rewards, whereas, if they behave antisocially, a clear set of firm, fair and modest punishments rapidly comes into effect.

Each parent was visited at home at least once during the 12-week parent-training intervention. This enabled particular problems getting in the way of effective parenting to be tackled on site in privacy. Problems addressed included practicalities such as how best to implement the programme in their particular accommodation and any personal difficulties the parents wished to discuss.

We originally chose this programme because the research showed it had one of the largest effects in improving outcomes for children, and because it was sensitive to ethnic diversity and paid special attention to parents' emotional needs, resulting in low drop-out rates. The programme is very respectful of parents' own culture and beliefs, and adopts a collaborative rather than instructive approach. We have replicated the basic outcome findings on effectiveness for a British population using the UK version (Scott *et al.*, 2001a).

Literacy element

The literacy strand of this intervention combined the Pause Prompt Praise (PPP – McNaughton *et al.*, 1987) approach to reading with a 'whole language' approach, which focused on discussion of the book and also on language 'play' with sounds and letters. The PPP was initially developed in New Zealand during the 1970s as a way to train parents as tutors and was then extended to a range of tutors and settings. Parents or peers are trained to provide one-to-one tuition to school-age children who fail to make the expected progress at school (Merrett, 1998). The goal is to increase the child's ability in independently reading a text at an appropriate reading level. The programme has been replicated in many countries, including the UK, demonstrating significant gains in reading age for every month of training (for reviews of a number of studies see Glynn, 1987; Wheldall and Glynn, 1989). The

generalisability of the effectiveness of the PPP has been questioned mainly because of the small samples used; however, it has been suggested that parent training programmes, such as the PPP and Paired Reading (Topping, 1995), can improve the reading abilities of poor readers in a more effective way than parent listening programmes (Toomey, 1993). The literacy element made up six of the 16 sessions offered.

Group leaders

Each of the 11 groups was run by a leader and a co-leader. The main leader (for eight groups) had an undergraduate psychology degree and a Masters in child development, plus extensive experience and certification in delivering the Incredible Years programme. The remaining three groups were led by a person with a psychology degree and training in the programme but not certification. Co-leaders had extensive training as child mental health professionals and certification (seven groups), or were trainees with psychology degrees but not much group experience (four groups).

Training of leaders

Before running groups for this study, leaders were trained in the basic child behaviour management programme in four stages: (1) attendance at a three-day accredited training course in the Incredible Years method; (2) observation of a 12-week group, with (3) attendance at the leader's weekly supervision; (4) leading at least three groups of clinically referred children with weekly supervision, during which videotapes of their practice were examined; (5) accreditation from the programme originator, based on submission of (a) forms with details of groups run, adherence to protocols and feedback from group participants, and (b) videotapes of group sessions, which were adjudicated for fidelity to the model and skill in delivering it. Co-leaders completed at least stages (1), (2) and (3); some completed (4). Supervisors were certified for this ('mentors').

Training for the literacy programme was less formal, but included an initial two months of weekly meetings to become familiar with the programme, including the role playing of specific reading techniques.

Treatment fidelity

This was strongly emphasised and was addressed by:

1 the initial training described above

2 completing treatment adherence schedules after each session

3 gathering of weekly feedback from group participants and responding appropriately

4 attendance at weekly supervision meetings with an accredited IY supervisor ('mentor') and with the originators of the literacy programme; during supervision, videotapes of the last group were shown and therapeutic techniques discussed and practised

5 the supervisors attended three-day training workshops held annually by the programme originator.

Control group

Participants randomised to the control group were offered drop-in services at the school, which was open to every parent at the school.

Other help available to all participants in both arms of the trial

Tier 1: general practitioner

This was the regular family doctor service. As for all service use in this study, the only consultations counted were those for the index child's behaviour problems.

Tier 2: school-based drop-in service

This programme was available to all families. It was delivered in all four schools. Parents made appointments to see a family therapist or speech and language therapist. Families were offered the drop-in services whether or not they were allocated the intensive programme.

Tier 3: child and adolescent mental health service (CAMHS)

This was the usual multidisciplinary CAMHS service, requiring referral by a GP, teacher or social worker.

Tier 3: community child health

This service included community paediatricians and related professionals, and required referral by a professional.

Screen

Although this was a universally offered programme, we were interested to know whether we were capturing the more severely affected children and what proportion of the whole class we were not reaching, We therefore chose to take a measure of all children in the class from teachers and parents. The plan was to divide the children into low and high risk of social exclusion as predicted by antisocial behaviour. Then, if there were more applicants for the programme than there were places, it would be possible to favour parents of high-risk children (see details below).

The screen used was (1) the Strengths and Difficulties Questionnaire (SDQ) filled in by teachers and parents (Goodman, 1999), which has normative data on over 10,000 UK children. This was supplemented by (2) the eight DSM IV and ICD ten items used to make a diagnosis of oppositional-defiant disorder (World Health Organization, 1993; American Psychiatric Association, 1994). These were scored on a four-point scale (1 – not true, 2 – just a little true, 3 – pretty much true, 4 – very much true). Parent and teacher scores from the conduct subscale of the SDQ were summed, as were the oppositional-defiant disorder items. The cut-off for the trial was a total score of 5 on the SDQ or 10 on the DSM criteria scale, corresponding to a level of reported antisocial behaviour reached by the highest 18 per cent of the national population, thus putting the children concerned at high risk of later social exclusion and low scholastic attainment (Ford *et al.*, 2003). The poor outcomes of such children are described in the introduction.

Recruitment to randomised controlled trial

Note – there are two types of recruitment described in this report: recruitment to the randomised trial (which has both experimental and control arms; i.e. parents agreed to be interviewed), and then, only in those allocated to the experimental arm, recruitment to the intervention (i.e. whether parents chose to attend it).

First, in each school, each year, an intervention and a control class were randomly selected. Second, letters went out to all parents and coffee mornings were held; the SPOKES (Supporting Parents on Kids' Education in Schools) programme was offered to everyone in the intervention class regardless of the child's problem behaviour. Third, parents who expressed an interest were then contacted to assess further eligibility criteria: (1) ability to understand English; (2) index child free of clinically apparent marked general global developmental delay or disorder. All parents of high-risk children were offered places and parents of four low-risk children were randomly selected to form each group.

Measures

Family characteristics

Demographic features: an interview covered who lived in the household, ethnicity, family income, parental education, etc.

Parenting

Direct observation

The observation procedure of the Conduct Problems Prevention Research Group (1999) was used, with videotaping of parent–child interaction at home across three tasks:

1 child-directed play (ten minutes)

2 parent-directed task – child attempts a difficult construction with Lego toy bricks (ten minutes)

3 parents gets child to tidy away the toys (three minutes).

Scoring was made by raters blind to intervention allocated; because of its labour-intensive nature, only half of the sample was assessed this way. Two approaches to coding were used.

1 *Attachment promoting parenting style*: a recently devised coding scheme was used that measures *sensitive responding*, the core construct in attachment theory. Constituent elements rated included: (a) responsiveness to the child's verbally and non-verbally expressed requests for help; (b) response to the child looking lost or in need of help, but not requesting it; (c) responsive engagement with child in the joint activity; (d) sensitive child mindedness, i.e. anticipating what the child might be feeling; (e) responsive facilitation, i.e. helping the child in the task that they wish to achieve, by going at the child's pace; (f) encouraging and promoting autonomy in the child, by letting them take the lead and helping them decide how to do tasks and work things out for themselves; (g) warmth expressed to child. Overall ratings were made on a seven-point scale. For full details of the coding criteria, see Matias (2006). To assess the reliability of the measure, 20 tapes were independently rated by two coders; the intraclass correlation for the scale was 0.77, thus showing good reliability. Both coders were of white European background.

2 *Child-centred and child-directive parental behaviours*: here, rather than make global ratings of parental style, each individual vocalisation by the parent was rated using a scheme based on social learning principles. Coders used a modified version of the FasTrack coding scheme, the Parent Behaviour Coding Scheme (PBCS – Aspland and Gardner, 2003). Codes were: (a) child-centred acts (commenting on the child's activities, encouraging comments, praise); (b) seeking the child's co-operation (putting requests to the child in respectful style, as questions in the conditional tense); (c) child-directive acts (clear commands, vague commands). Intraclass correlations for the three scales were 0.75, 0.69, 0.83.

Semi-structured interview of parenting practices

This was a modified form of the interview devised by Quinton *et al.* (1985). Topics covered include:

- *positive parenting practices*, such as giving praise and rewards
- *non-physical discipline*, including withdrawal of privileges, use of short periods of time out from positive reinforcement

- *coercive discipline*, including how often parents got angry and critical of their child, etc.

For each topic area, the parent would be asked to give detailed examples from the previous week and then the investigator would make a rating about the practice in question. The interview has satisfactory reliability and good validity when compared with directly observed parenting practices and other assessments of parenting, such as being referred to social services (Dowdney *et al.*, 1984; Quinton *et al.*, 1985). Kappa inter-rater reliability coefficients ranged from 0.62–0.77.

Its advantage over direct observation is that it can cover events across a large timescale, both within the day (e.g. parenting when the child gets up in the morning, mealtimes, bedtimes) and important but less common events that may occur only a few times a month (e.g. major anger and shouting or smacking).

Its advantage over questionnaires is that the interviewer makes the judgement of the parenting using objective criteria based on detailed descriptions, whereas in questionnaires the parent endorses more general statements, which tend to be strongly influenced according to their opinions and point of view, rather than necessarily actually reflecting what is going on at home. Questionnaires are more likely to be affected by a bias to wish to be seen to carry out socially desirable parenting practices and to under-report practices that the parent may feel are subject to disapproval.

Child behaviour

Direct observation

The procedures described above under direct observation of parenting were used. The main scale was the child's attentiveness, their ability to attend to the task in hand, the opposite end of which is to show inattentiveness and distractibility, which characterises Attention Deficit Hyperactivity Disorder (ADHD). In a one-to-one situation with the parent, there are too few instances of significant oppositional or frankly antisocial behaviour to make ratings meaningful.

Semi-structured interview

The Parent Account of Child Symptoms (PACS – Taylor *et al.*, 1986) was used. This is an investigator-based interview similar in format and scoring to the Child and

Adolescent Psychiatric Assessment, but it is shorter. It has been used in many large-scale surveys of thousands of children (Taylor and Sandberg, 1984) and covers:

- *attentiveness/ADHD symptoms*: by asking, for example, for how long the child typically can read a book, play on their own, etc., and whether they are fidgety and get up while they are doing this

- *antisocial behaviour*: eight antisocial behaviours are covered, such as lying and stealing, disobedience and tantrums, destructiveness and physical aggression

- *emotional symptoms*: these included fears, worries, and sleep disturbances.

Inter-rater reliability was independently checked for 30 interviews and Cohen's kappa was 0.74, 0.71, and 0.68 respectively.

Questionnaire

The Strengths and Difficulties Questionnaire (Goodman, 1999) was completed by the parents and teachers.

Child literacy

British Ability Scale Single Word Reading (BAS II – Elliot *et al.*, 1997) was used. This is one of the Achievement subscales of the latest version of the British Ability Scales and is a standardised measure of the child's ability to read single words. Unlike some other tests, such as the Wechsler Objective Reading Dimensions, the BAS is designed to be less dependent on culturally specific influences, and does not assume that there is any innate quality such as intelligence (Hill, 2005). Researchers received extensive training until they reached a satisfactory level of reliability defined by the test developer prior to the actual testing of the children.

Parental satisfaction

Parent Satisfaction Questionnaire, for parenting group attendees (Webster-Stratton, 1989) was used.

Statistical analysis

Randomisation was at the level of the classroom, which has consequences for sample size – these technical issues are addressed in Appendix 1.

Analysis strategy

All main results were to be analysed on an 'intention to treat' basis (i.e. including all cases assigned, irrespective of how much intervention they actually received) using multiple regression analysis, entering post-score as the dependent variable, and the pre-score and intervention status as independent variables. Multilevel modelling would allow for clustering effects on the variance as alluded to in Appendix 1.

The 'intention to treat' analysis is important since it gives a realistic picture of the amount of change that might be expected in the whole sample allocated to the intervention. For principal outcomes, the following additionally applied.

1 An analysis would be carried out for missing post-intervention data, replacing them with pre-values (last value carried forward) – in other words, this assumes that the intervention made no difference, so is a conservative assumption. This is a test for any biases that could be introduced through differential amounts of missing data in one arm of the trial.

2 Per-protocol analysis would include only those cases who attended a minimum of five of the 18 sessions offered. This then allows one to see whether those parents who attended the intervention changed. If many had dropped out, an intention to treat analysis alone might underestimate the effectiveness of the intervention, since it included those who didn't turn up.

3 Programme uptake and ethnic variations

Participant flow and recruitment into study

Screen

See Appendix 2. Of the 672 children on the school roll, 665 had SDQs completed by teachers, representing 99 per cent of children in their classes. Parents of 532 children returned SDQs, a rate of 80 per cent. Many non-responders were said by teachers not to respond to any paperwork sent by the school; some were not at all fluent in English. The cut-off score (see above) was set at an SDQ level of antisocial behaviour attained by 18 per cent of a large nationally representative sample (Green *et al.*, 2005), but, in this disadvantaged inner-city population, 24 per cent of those screened were above this criterion. This then answers the *first question*: 24 per cent (a third above the national average) of children in this area were at serious risk of social exclusion and parenting stress due to the child's level of oppositional and antisocial behaviour.

For the purposes of deciding who should be guaranteed a place in the intervention, we decided to also include parents of children who scored over 10 on the oppositional-defiant items. This increased the sample whom we deemed to be at higher risk and so deserving of priority places to 36 per cent of our sample. We cannot say how this proportion would map onto national averages, as the second measure has not been normed in the UK so far.

In-depth study sample

Seventy-five per cent (174/233) of families approached agreed to take part in the study. Characteristics of the recruited children and their parents are given in Table 1.

Table 1 Personal characteristics of families

	Intervention group (*n* = 89)	Control group (*n* = 85)	Mean values for England and Wales
Child age (mean in months)	66.4	65.7	
Child male	52% (46)	43% (37)	51%*
Primary caregiver in ethnic minority	76% (67)	71% (61)	9%*
Lone parent	56% (49)	45% (39)	22%*
Mother ended education by 16, gained no further qualifications	24% (21)	26% (22)	13%*
Council or housing association home	82% (72)	77% (66)	17%*
Child entitled to free school meals	43% (38)	41% (35)	18%*
Household income £175 per week or less	43% (38)	34% (29)	5%*
Mother mental health reaches caseness (GHQ 12 score 3+)	11% (10)	9% (8)	18%**
Child antisocial behaviour score (PACS interview; mean, sd)	0.78 (0.52)	0.72 (0.45)	0.8 (0.4)***
Child inattention/overactivity score (PACS interview; mean, sd)	0.56 (0.48)	0.51 (0.39)	0.5 (0.5)***
Child reading score (BAS; mean, sd)	7.4 (12.3)	8.1 (11.3)	

There were no significant differences between intervention and control groups on any variable.
* *Data from Social Trends (London: Office of National Statistics, 2000).*
** *Data from Health Survey for England (London: The Stationery Office 2001).*
*** *Data from Taylor* et al. *(1991).*

The sample was thus a disadvantaged, inner-city, predominantly minority ethnic group population. However, the parents reported fewer symptoms of anxiety and depression than the UK average, and the children's levels of antisocial behaviour judged at detailed parental interview (rather than questionnaire, where they were slightly higher) were no higher than the national average for the UK. On the other hand, their teachers reported them as slightly more disruptive than the average, in the worst 40 per cent. In summary, although living in a poor area, many families were doing well.

Pen picture

Among the majority, African group, parents were typically relatively recent immigrants to the UK (last five to ten years) from Nigeria, who had strong Christian beliefs, and attended church very regularly and gained a strong sense of community support from fellow churchgoers. They were taking higher education courses in professions such as business studies or accountancy, and working long hours. Thus, while they did indeed live in a poor area of Britain, they were not educationally in a lower group,

and were energetic and 'on the way up', with organised lives and plenty of community support. They had strong disciplinary beliefs about child behaviour (several expressed the view that, if a child was misbehaving, it was shameful, and an indication that the man of the house wasn't beating the child enough).

Non-continuation with study

Of the 174 initial participants on whom an initial interview was conducted for the randomised controlled trial, 152 (87 per cent) were successfully followed up a year later. Of the 22 who were not followed up, 14 were no longer on the school roll and had moved away, six said they were now too busy with work, one said they were ill and one said they would do it later. Thirteen were in the arm allocated to intervention, nine control.

Take-up of interventions

Current NHS tier 1, 2 or 3 services

See Table 2.

Table 2 Take-up of current NHS tier 1, 2, or 3 services for child emotional or behavioural problems

	Intervention (*n* = 63)	Control (*n* = 76)	Black minority ethnic*	White British	Initial severity**	Change in problems**
No service use	90% (57)	91% (69)	95% (83)	83% (43)	0.74	0.08
Any service use	10% (6)	9% (7)	5% (4)	17% (9)	1.1	0.19
Service details						
Tier 1: GP	0% (0)	1% (1)				
Tier 2: school drop in	5% (3)	6% (5)			0.96	0.12
Tier 3: CAMHS	5% (3)	2% (2)			1.4	0.31

* *Black African and African Caribbean combined; chi-squared test of difference in service use from white British* p *= 0.01.*

** *PACS antisocial behaviour initial score and change score, population mean = 0.8, sd = 0.45.*

Of the 139 parents on whom service use follow-up data were available, 13 (10 per cent) had used some form of NHS service for their child's emotional or behavioural problems, at the service level of tier 1 general, tier 2 professional in the community, or tier 3 multidisciplinary child and adolescent mental health service. This number was split equally across both parenting programme and control groups, thus suggesting that the parenting programme did not diminish (through 'nipping problems in the bud') or increase (through greater recognition that there were problems that needed to be treated) the number attending traditional services. The white British population used current services three times more than black minority ethnic parents, of whom only 5 per cent used them. This could be construed as the usual services failing to be accessed by, and acceptable to, black minority groups.

However, although the small numbers mean that the trends are only suggestive and not reliable, it did appear that the services were used appropriately, in terms of levels of severity. Thus there was an increasing gradient from those who didn't use services (whose children were normal in terms of reported antisocial behaviour) to those who used the tier 2 school-based drop-in service (whose children were a little more disruptive, but still clearly in the normal range: 0.5 sd above the mean), to those who attended the tier 3 service, who were around the clinical range (1.5 sd above the mean = worst 7 per cent of the population).

Although the numbers are far too small to allow any firm conclusions at all, there also appeared to be a suggestion that the drop-in service (eight cases) produced no more change than those who had received no service, but the tier 3 CAMHS (five cases) did appear to lead to improvement. The service usage results then answer the *second question*: only about a tenth of the population accessed the current NHS services, despite these including an innovative drop-in service provided at the schools by a counsellor/family therapist from the local CAMHS; black minority ethnic families accessed the services far less.

Parent groups

Enrolment

Of the 89 parents studied in the classes who were offered the parenting programme, two-thirds ($n = 58$, 66 per cent) enrolled and attended at least one session; one-third ($n = 31$, 33 per cent) of parents declined to enrol. This initial attendance rate of two-thirds was high, given the preventive nature of the programme and the population in question, and was extremely encouraging. Many parents in the population under study were lone and had jobs, so were debarred from attending. Therefore to get this

level of engagement was a considerable achievement. That may sound surprising to those not familiar with studies of this kind, but it is important to remember that we are requesting that parents participate in an intensive programme, which they themselves did not seek out and which is provided by an organisation/professionals with whom they had no prior relationship or, likely, knowledge.

This answered the *third question*: a high proportion of families were prepared to give up precious time to enrol in a programme designed to improve the life chances of their children. It should be pointed out that, if one wished to extrapolate to predict the proportion of the total school population that might attend, it is possible a somewhat smaller percentage might have enrolled since, in this study, the denominator was defined by those parents who had returned the screening questionnaire (80 per cent of the total), of whom 75 per cent had agreed to take taken part in the randomised controlled trial. It is plausible to suggest that the parents who didn't return the questionnaire, and those who declined to take part in the randomised controlled trial, may also have been less likely to take part in the intervention.

Fathers

Over half the families offered intervention were single-parent families without a father or male partner living at home. This left 44 per cent with a father figure. Of these father figures, a quarter attended, giving an overall rate of just over 10 per cent of parents attending, or six men. Thus, when in this report we speak of the parent, typically, it will be the mother. However, we didn't wish to exclude fathers, but rather include them and record what happened to them and their children – the point of this trial was to see what happened under lifelike, everyday conditions.

Cost and cost effectiveness of preventive programme

The preventive programme cost £110,000 per year over two years to deliver. These were the actual costs as delivered in 'real life', and included salaries for two group leaders, a part-time assistant and supervision, as well as considerable costs for providing a crèche for parents to leave babies and young children while they attended the group. Because about 20 per cent of the staff's time was involved in initial setting up, running additional courses (covering, for example, the transition from nursery to primary school), and training others outside the project, costs were estimated at £88,000. Forty-three additional parents commenced the intervention but were outside the PALS study. Thus, after screening and setting up in the schools,

131 children had an intervention costing £176,000, or £1,343 each. Cost effectiveness varied according to outcome – sensitive responding and child-centred parenting cost about £1,800 per sd for those who attended five or more sessions. Cost effectiveness for child outcomes other than attention on-task cannot be calculated as there was no evidence of effectiveness. This answers the *second part of question 3*. It should be noted that these costs include employing oncosts and costs for office expenses, but not office rental costs.

Reasons given for non-enrolment in parenting groups

A separate qualitative study of 32 *non-engagers* (who declined the invitation to attend) and *non-completers* (who initially attended but then dropped out prior to completion – attending less than four sessions) found that the overwhelming reason given was changing commitments, in over 90 per cent new jobs, or training courses being attended (Scott *et al.*, 2006a, forthcoming).

Attendance

Among the total population offered the programme ($n = 89$), the mean attendance was 4.8 sessions (median 2). This figure includes the third who never attended at all. While some may feel including all families offered the programme is an unduly conservative approach to take when testing the effectiveness of an intervention, this trial was based on discovering what would happen under real-life conditions if the programme were offered to a total population, so it is important that as the primary outcome we report on all those targeted, not just those who turned up; the latter can be covered in supplementary analyses of good attenders. For those two-thirds who enrolled ($n = 58$), the mean attendance was 7.3 sessions out of 18 offered (median 5). Just over half ($n = 31$, 53.4 per cent) attended at least five sessions, the minimum we believed likely to enable parents to grasp and practise the principles of the programme. The predominant pattern was not that some parents attended a certain number and then ceased to attend, as we had expected. Instead, it was a pattern of attending a few, missing one or more, then coming back. This patchy attendance pattern is typical of prevention programmes (in contrast to clinical intervention programmes where there is an urgent reason to attend because of the child and family's difficulties). Typically, even in majority populations in the England and the USA, the non-completion rate is 40–80 per cent in prevention trials, 20–50 per cent in clinical trials.

Reasons given for non-completion of parenting groups

The reasons given for the missed sessions were usually around being extremely busy. The term non-completion seems to describe this better than 'drop out'. This answers the *fourth question*: the reasons given by parents why they didn't attend some of the sessions offered.

Enrolment and attendance by ethnicity

See Table 3. A concern of the study was whether the parenting programme would seem relevant to parents from ethnic minorities, or whether mainly only to white parents. The results show that a high proportion of those in ethnic minorities enrolled – in all the three main groups, enrolment was within 5 per cent of the average of 66 per cent. Once begun, all groups attended broadly similar amounts, with a tendency for the white population to stay longer; there were no statistically significant differences (although modest differences may have been missed as numbers were rather small). This then answers the *fifth question*: whether parents from ethnic minorities would find the programme accessible and acceptable.

Table 3 Enrolment and attendance at parenting programme by ethnicity

	Of all parents offered programme		Of those enrolled	
	Per cent (number) enrolled	Mean number of sessions attended*	Attended 1–4 sessions	Attended 5–18 sessions
African	61% (23/38)	3.7	52% (12)	48% (11)
African-Caribbean	63% (12/19)	4.6	50% (6)	50% (6)
White British	71% (15/21)	6.7	27% (4)	73% (11)
Other	80% (8/10)	5.1	62% (5)	38% (3)
Total (*n* = 88)	66% (58)	4.8	47% (27)	53% (31)

* *Including those who didn't turn up, i.e. attended zero sessions.*

Consumer satisfaction

Consumer satisfaction questionnaires were available on 43 of the 58 parents who commenced the intervention. Ninety-three per cent of black African parents said they were well or extremely satisfied with the programne and 91 per cent said they would recommend it to a friend, similar rates to the African-Caribbean and white parents.

Parenting practices among different ethnic groups

In the results below, we analysed the data to account for the cluster randomised or nested structure of the data, that is, the selection of more than one child from the same classroom – for further details, see the results section in Appendix 1.

Parent–child relationship quality was assessed using direct observation, parent interview and questionnaire. In order to keep this report to a reasonable length, we limit results in this report to the first two approaches. Analysing data from direct observation provides an opportunity to examine if there was an 'objective' change in parenting according to independent observers (observers were blind to treatment condition and assessment wave). Analysing data from the parent interview allows us to examine if there was 'subjective' change, that is, change according to how the parent sees the child and considers how she/he approaches the child as a parent.

Parenting practices assessed by direct observation

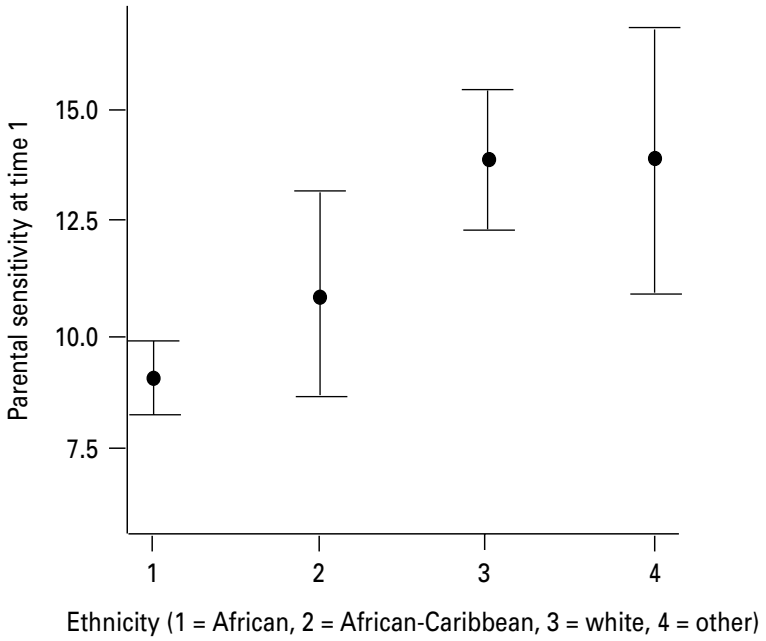
Table 4 reports the findings on selected parenting measures from direct observation. To control for the possibility that age and gender are differentially distributed across ethnic groups, we report the results adjusted for age and child gender. The results show that African and African-Caribbean parents scored lower on the measure of sensitive responding (effect size 1.8 sd), and made about half the number of child-centred remarks during the observation period (effect size 1.0 sd), but that there were no ethnic differences for child-directive remarks. The example of sensitive responding is depicted in Figure 1.

Table 4 Parenting practices from observation, by ethnic group

	Sensitive responding Mean (sd)	Child-centred Mean (sd)	Child-directed Mean (sd)
African (*n* = 39)	9.1 (2.4)	16.3 (14.7)	122 (64)
African-Caribbean (*n* = 14)	10.9 (3.9)	18.9 (15.7)	110 (89)
White British (*n* = 17)	13.9 (3.0)	34.6 (24.9)	141 (75)
Other (*n* = 8)	13.9 (3.5)	34.6 (17.8)	123 (40)
All (*n* = 78)	10.9 (3.6)	22.7 (19.4)	124 (69)

Contrasts: for sensitivity, and child-centred: white, other significantly > African, African-Caribbean ($p < 0.01$*).*

Figure 1 Sensitive responding ratings, by ethnic group



Parenting practices assessed by interview

Table 5 shows the differences according to interview. This reveals a notably different picture, with the African population reporting more use of praise and rewards than the white British population and a trend towards using less non-punitive discipline. *Question 6*, concerning whether there were differences in parenting practices between ethnic groups, is thus answered – there were. Possible interpretations of these findings are mooted in the discussion section.

Table 5 Parenting practices from interview, by ethnic group

	Praise and rewards Mean (sd)	Non-punitive discipline Mean (sd)
African (*n* = 79)	3.41 (1.6)	1.65 (1.7)
African-Caribbean (*n* = 31)	2.93 (1.6)	1.65 (1.9)
White British (*n* = 42)	2.86 (1.4)	2.31 (2.4)
Other (*n* = 21)	3.47 (1.7)	1.33 (1.4)
All (*n* = 173)	3.19 (1.5)	1.77 (1.9)

*Contrasts: for praise and rewards: African significantly > white (*p *= 0.05).*
*For non-punitive discipline: white significantly > other (*p *= 0.048), trend > African (*p *= 0.08).*

4 Changes in parenting practices due to the intervention

Findings from direct observation

See Table 6. Results are shown first for all assigned cases, i.e. an intention to treat basis, and then for a per-protocol analysis, taking those parents who attended at least five sessions.

Table 6 gives the pre-treatment and follow-up means (SD) for the directly observed parenting measures. We focus on follow-up (i.e. six months post-treatment completion) because we were interested in whether or not the intervention had a lasting effect, that is, past the point at which the intervention ended. These scores do not account for ethnicity, child gender or age.

Table 6 Changes in parenting practices: direct observation data

		Pre-score (sd)		Follow-up score (sd)	
Sensitive responding	Controls (*n* = 39)	11.1	(3.8)	10.3	(3.3)
	Intervention – all allocated (*n* = 39)	10.8	(3.5)	11.4	(4.1)*
	Intervention – 5+ sessions (*n* = 15)	11.4	(3.6)	13.0	(3.8)**
Child-centred behaviour	Controls (*n* = 39)	24.6	(21.2)	19.6	(14.7)
	Intervention – all allocated (*n* = 39)	20.8	(17.5)	28.2	(27.2)*
	Intervention – 5+ sessions (*n* = 15)	24.1	(20.1)	37.3	(37.6)**
Child-directive behaviour	Controls (*n* = 39)	115.7	(67.3)	105.4	(49.1)
	Intervention – all allocated (*n* = 39)	132.6	(70.9)	118.4	(63.8)
	Intervention – 5+ sessions (*n* = 15)	110.6	(47.4)	110.4	(64.6)

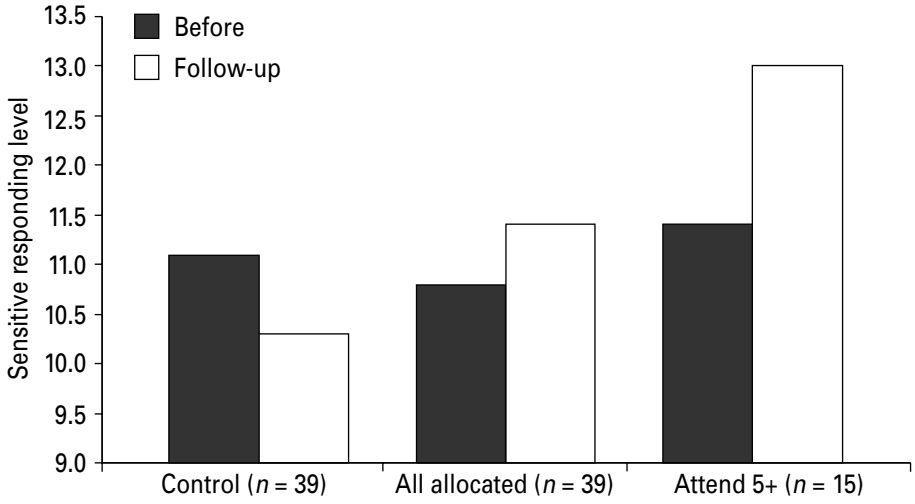
* *Significant at* p *<0.05 vs. control group.*
** *Significant at* p *<0.01, in multilevel regression.*

Sensitive responding

See Figure 2. Results from the regression analyses for observed parental sensitivity are provided in Table A1.1 in Appendix 1. Findings show that the intervention was associated with a significant increase in observed parental sensitivity six months after the intervention ended; the effect of the intervention was to increase parental sensitivity 1.42 points on a seven-point scale, an effect size of 0.4 standard deviations. (A standard deviation is a way of comparing the magnitude of the change; conventionally, 0.2 sd is a small effect, 0.5 is moderate and 0.8 is large. In

prevention trials, results are usually small, or moderate at best; in clinical trials, sometimes they are large.) Child age, or gender, or ethnicity was not associated with change over time. Further analyses showed that the effect of the intervention did not vary significantly across ethnic groups, that is, there was not a significant interaction between intervention group and ethnicity (whether ethnicity was coded as white British vs. other, or according to finer distinctions).

Figure 2 Changes in sensitive responding



For sensitive responding, the amount of intervention received had a substantial effect on the amount of change observed. The analysis shows that those parents who received nought to four sessions of the intervention exhibited a non-significant positive increase in sensitive responding compared with those who did not receive the intervention. However, those who received five or more sessions showed an increase of 2.54 (p <0.01), an effect size of 0.7 standard deviations, a substantial increase given the seven-point scale and the marked stability over time.

Example of high and low sensitive responding scores

High score

Mother sits on the floor close to her son, facing him, frequently looking at him. When he makes a comment, she responds calmly and warmly. Conversation flows, with a to-and-fro exchange which the mother shows interest in and enjoyment of. Even when they are not chatting, she watches his play and, when he is stuck, she responds to his need – e.g. if he cannot find a piece to make the Lego construction, she is aware of this and may help him with a facilitating prompt or by picking out the necessary piece. In short she is 'there for him'.

(Continued)

Low score

Mother sits quite a long way off from her son, not facing him. She seldom looks at him and there is mostly silence. Conversation is desultory with a lot of 'dead air' between them and her son's comments are either ignored or, if they do elicit a response, it is minimal and unenthusiastic – it is not warm or encouraging, and does not develop his ideas or acknowledge positively what he is communicating. She hardly seems to notice his play, instead playing with the materials herself and being preoccupied with this – at one stage she orders him to help her. On a couple of occasions when she does monitor what he is doing, she tells him off for not doing something the way she would like it, even though he has made an effort and no harm is done.

Child-centred parenting

The second observational variable we considered was child-centred parenting, i.e. attentiveness to the child and involvement in their world assessed by the number of times the parent attended to the child by commenting on what they were doing, encouraging them or praising them. Overall, parents in the intervention group exhibited a significant increase – approximately 0.5 of a standard deviation compared to controls In this case, we did observe a significant variation between scores of those belonging to minority ethnic groups in comparison to white British. Parents in the black African group showed significantly less change in child-centred parenting than the white British. A supplementary analysis examined if there was an effect of intervention dose, again defined as nought to four versus five or more sessions; those who attended more had twice the change (see workings of statistical tests in Table A1.2 in Appendix 1).

Child-directive parenting

Another widely used index of parenting in the intervention literature is child-directive parenting. There was no evidence that the intervention led to a decrease in observed child-directive parenting. Further analysis (not shown in table) indicated that there was no dose effect (there was still no intervention effect when we examined those who attended five or more sessions). Also, there was no evidence of an interaction between intervention and ethnicity – the intervention had a non-significant effect across all ethnic groups.

Findings from interview

See Table 7.

Table 7 Changes in parenting practices: interview data

		Pre-score (sd)	Follow-up score (sd)
Praise and rewards	Controls (*n* = 74)	3.05 (1.48)	2.84 (1.40)
	Intervention – all allocated (*n* = 66)	3.45 (1.52)	3.06 (1.51)
	Intervention – 5+ sessions (*n* = 27)	3.48 (1.45)	2.92 (1.51)
Calm discipline	Controls (*n* = 74)	1.88 (1.80)	1.36 (1.78)
	Intervention – all allocated (*n* = 66)	1.64 (1.83)	2.03 (2.20)*
	Intervention – 5+ sessions (*n* = 27)	1.67 (2.00)	2.33 (2.42)*
Criticism	Controls (*n* = 71)	0.92 (0.74)	1.19 (0.89)
	Intervention – all allocated (*n* = 60)	1.15 (0.92)	1.09 (0.85)
	Intervention – 5+ sessions (*n* = 26)	1.46 (0.86)	1.15 (0.78)**

* *Significant at* p *<0.05 vs. control group.*
** *Significant at* p *<0.01; in multilevel regression.*

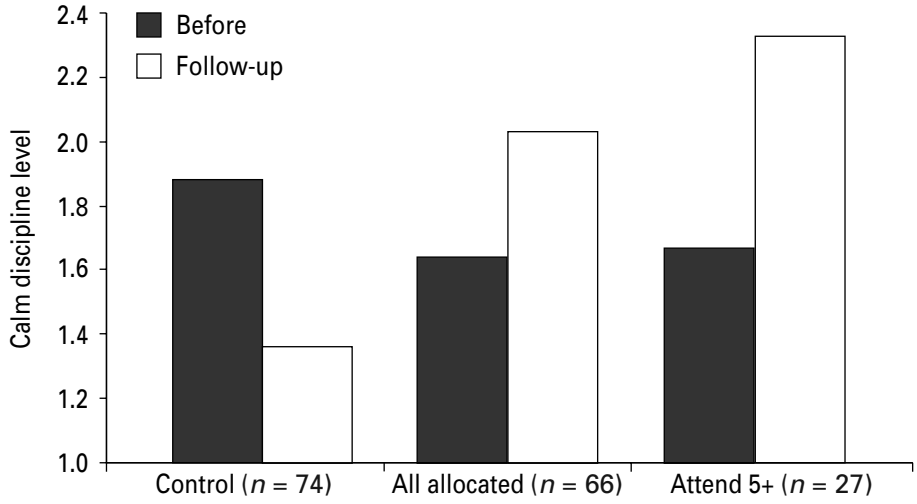
Use of praise

There was no evidence that the intervention increased the use of praise, as assessed using this method. Interestingly, as reported above, the *observed* measure of positive attends, which is another index of the use of positive comments and praise, did show a strong intervention effect. Supplementary analyses (not shown in table) of the interview measure of praise indicated that there was no greater effect among those who attended five or more sessions; neither was there any evidence that the intervention was differentially effective across ethnic groups (see workings of statistical tests in Table A1.4 in Appendix 1).

Use of calm discipline

See Figure 3. This term refers to two ways of disciplining a child in response to unwanted behaviour – the withdrawal of privileges and sending the child for a short time to time out (a boring place). The intervention was associated with a significant increase in the use of appropriate discipline. Parents with boys were more likely to show an increase in the use of positive discipline over time, and African-Caribbean and black African families were less likely than white British families to do this.

Figure 3 Calm discipline



Supplementary analyses (not shown) showed that families that attended nought to four sessions had an increase of 0.61 (0.35) and families receiving five or more sessions exhibited an increase of 0.78 (0.39). There was not a significant interaction between intervention and ethnic group; this is of note given the strong main effects of ethnicity on change in discipline over time (see workings of statistical tests in Table A1.4 in Appendix 1).

Criticism

This showed a trend towards more reduction in all the parents allocated to the intervention arm and a significant reduction in those who attended five or more sessions, by 0.7 sd.

Summary of parenting effects

See Table 8.

Table 8 Summary table of changes in parenting

	Effect of intervention	More sessions = greater effect?	Ethnic differences in intervention effect
Observed			
Sensitivity	Increased	Yes	No
Child-centred	Increased	Yes	No
Child-directive	No change	–	No
Interviewed			
Praise and rewards	No change	–	No
Calm discipline	Increased	Yes	No
Criticism	Reduced	Yes	No

The above analyses show that the intervention had lasting effects on the parent–child relationship, at least six months after the intervention ended, thus answering *question 7*. Group differences were observed for two out of the three measures of the 'gold standard' measure of parent–child relationship, observational data. Perhaps the most impressive finding from these observational data is that parental sensitivity showed a sizeable and lasting change, despite not explicitly being targeted in the behaviourally based intervention. This is an important finding, not one yet reported in the literature. It implies that parenting interventions may have wider effects than current models assume. On the interview measure there was an increase in use of calm discipline and a reduction in criticism, but no change in reported use of praise and rewards.

There was no evidence that the intervention was less effective in non-white British families, thus answering *question 8*. On the other hand, we found significant ethnic group differences in pre-treatment parenting practices and, in some cases (e.g. discipline), ethnicity predicted change over time even *if there was no evidence of differential treatment effects according to ethnicity*. Of course, the intervention may have had different meaning for parents from different ethnic backgrounds, but these findings do suggest that it is not necessary to presume that an intervention developed within one cultural context would not generalise to a different cultural context.

For the measures that showed change due to the intervention, we found evidence that the number of sessions, defined as nought to four or five or more, made a substantial difference in the intervention effect. This answers *question 9*. However, we did have rather little power to detect these differences, and there are likely strong selection effects influencing which parents are able to attend many/most sessions.

We did not report intervention effects on all of the available parenting measures. Instead, we selected from those measures available those that have the strongest links with prior research.

5 Changes in child behaviour

Child outcomes

Please see results in Table 9.

Table 9 Child outcome data

		Pre Mean (sd)	Follow-up Mean (sd)
Observation			
Attention on task	Controls (*n* = 39)	17.87 (2.5)	18.51 (2.3)
	Parent group (*n* = 39)	17.33 (2.6)	18.82 (2.3)*
Interview			
Inattention and hyperactivity	Controls (*n* = 75)	0.51 (0.39)	0.48 (0.35)
	Parent group (*n* = 66)	0.56 (0.48)	0.52 (0.50)
Antisocial behaviour	Controls (*n* = 78)	0.74 (0.44)	0.61 (0.37)
	Parent group (*n* = 74)	0.80 (0.50)	0.75 (0.43)
Questionnaire (parent)			
Antisocial behaviour	Controls (*n* = 76)	1.58 (1.9)	1.63 (1.5)
	Parent group (*n* = 69)	1.84 (1.7)	1.87 (1.9)
Questionnaire (teacher)			
Antisocial behaviour	Controls (*n* = 66)	1.26 (2.1)	1.02 (1.7)
	Parent group (*n* = 67)	1.45 (1.9)	1.39 (1.7)
Objective test			
Reading	Controls (*n* = 73)	8.9 (9.1)	29.6 (21.1)
	Parent group (*n* = 64)	7.5 (12.2)	28.7 (22.1)

Interview = PACS semi-structured interview; questionnaire = SDQ; reading test = BAS.
** Significant at p <0.05 vs. control group.*

Child ability to attend and concentrate, as directly observed

A main outcome measure of child behaviour was the ability to keep attending on the task they were doing and not keep switching from one thing to another, which, in its more marked form, characterises Attention Deficit Hyperactivity Disorder (ADHD). Poor ability to concentrate is associated with poor academic achievement and with generally disruptive behaviour, often seen at its most marked in class. It is also often associated with antisocial behaviour. The child's attending was rated by the observers across the three parent–child interaction episodes. Although we also rated child antisocial behaviour, in the event it was too infrequent for statistical analyses – most children simply didn't display any. This was not entirely unexpected, as several

investigators have found it difficult to evoke meaningful antisocial behaviour in parent–child interaction settings where the child has the undivided attention of the parent. This is true even for mildly stressful and demanding tasks (in our case, being asked to tidy away the toys), and even for samples selected for antisocial and disruptive behaviour (Aspland and Gardner, 2003).

Results show that the intervention produced an increase in the child's attention and on-task behaviour during the three tasks with their parent (effect size 0.41 sd). Further analyses (not shown) showed a general decrease in attention and on-task behaviour over time for boys compared to girls. We also again found a dose effect: compared with controls, the effect for those attending nought to four sessions was 0.1 sd and, for those attending five or more sessions, 0.9 sd. There was no differential effect of the intervention across ethnic groups. However, the interview of attending ability did not show any group differences.

Antisocial behaviour

Parents reported on their child's antisocial behaviour in a clinical interview (PACS) and on questionnaire. There were no intervention effects overall, or by ethnicity, or by attendance. Likewise, the teacher-completed SDQ showed no impact of the intervention on antisocial behaviour, although it must be borne in mind that the teacher filling in the questionnaire at follow-up was a different one from before, so may have rated the child differently because of different values and expectations. Indeed, the data bear out this assumption, with low continuity of children's ratings from pre-intervention to follow-up a year later.

Child reading ability of single words

Given that the intervention also included a literacy component, we assessed if there was a change in an index of literacy competence, single word reading, from pre-treatment to six months' follow-up. There was no evidence that the intervention was associated with an increase in the number of words that were read in the single word reading test. On the other hand, change over time in single word reading was greater in the black African group than in the white British group. Supplementary analyses using the number of sessions variable also indicated no effect of intervention for those who attended nought to four as opposed to five or more sessions. A further analysis indicated a significantly greater effect of the intervention in the 'other' ethnic group compared to the white British group, but the small number of individuals in that group and its heterogeneous nature make that finding hard to interpret.

Initial severity of difficulties and impact of intervention

The aim in stratifying the sample at the outset of the programme was to track those in most need, as indexed by reporting that their child was disruptive, and see whether they would enrol for the programme and whether it would work as well for them. Because, as whole population, the reported levels of child disturbance (once checked by interview) were reported only as average, and not high, this meant that the intervention was unlikely to have much impact on severity level of child behaviour, since it was low to begin with. Previous studies have shown a strong effect of initial severity on change, so that those with the most difficult problems respond best to the programme, whereas those who start off near normal have little room for improvement on the measures used (they are not having tantrums, lying or stealing in the first place). It was therefore plausible that the children in this study who began with relatively more marked problems, those who were screen positive, might have benefited more from the intervention than the screen negative ones, who had little room for improvement. However, analysis showed this was not the case. Those who were above the cut-off did not improve any more than those below it. In this sample, those above were in the middle of the normal range and not especially antisocial (see Table 10).

Table 10 Impact of intervention according to initial level of antisocial behaviour

Interview: antisocial behaviour (PACS)		Pre Mean (sd)	Follow-up Mean (sd)
Above screen cut-off	Controls (n = 33)	0.90 (0.48)	0.69 (0.41)
	Parent group (n = 39)	0.93 (0.90)	0.90 (0.46)
Below screen cut-off	Controls (n = 45)	0.62 (0.39)	0.55 (0.34)
	Parent group (n = 35)	0.69 (0.42)	0.59 (0.35)

Summary of child outcomes

Please see Table 11.

Table 11 Summary table of changes in child outcomes

	Effect of intervention	More sessions greater effect?	Ethnic differences in intervention effect
Attention (observed)	Increased	Yes	No
Antisocial behaviour (interview; parent and teacher questionnaire)	No change	–	–
Reading (tested)	No change	–	–

Whereas there was consistent evidence that the intervention had a lasting effect on parenting, no such unambiguous effect was found for child behaviour. The 'gold standard' measure, direct observation, found improved attention in the intervention group. However, according to the parent's own account (interview and questionnaire) and teacher questionnaire, there was no effect of the intervention. There was no improvement in the reading ability of those allocated to the intervention; nor was there a general effect whereby those with more severe initial difficulties improved more. Therefore the answer to *question 10* must be that there was no overall, convincing evidence that the intervention improved child outcomes in a broadly defined, reliable way, even though observed attention improved. Possible reasons for this are mooted in the discussion chapter.

6 Discussion

Characteristics of the inner-city population

The population studied was chosen because the intervention was part of a nationwide government initiative, On Track, to target children in need. The targeting strategy in this initiative, as in the far larger SureStart programme, was to take a very small geographical area of high disadvantage, as measured by multiple indices such as crime, income, proportion of families from an ethnic minority, housing (council or housing association), drug arrests, teenage pregnancy and so on. The Friary Ward within Peckham in Southwark, South-East London scored highly on all these measures. The schools were located either side of the Old Kent Road, a busy highway in a run-down neighbourhood, which was not designated as the lowest-value location in the game of 'Monopoly' for no reason.

Three-quarters of the population studied were from ethnic minorities (compared to a tenth nationally), half were lone parents (vs. a fifth nationally), four-fifths lived in council or housing association houses (vs. under a fifth nationally) and two-fifths lived in marked poverty – at a level found only in one in 20 families in England overall. In short, the families were living in some of the most stressful, disadvantaged conditions it is possible to experience in the UK today.

Proportion of children at risk of social exclusion (question 1)

Over 500 five- and six-year-old children of these families were screened using the Strengths and Difficulties Questionnaire and their level of disruptive behaviour was only modestly elevated, with a quarter showing levels usually found in a fifth of children nationwide.

Strengths of families

Although they lived in a very poor area in stressful conditions, many of the families had considerable strengths and resources, which equipped them well to survive such conditions. For example, many of the Africans, though mostly having come to this country within the last ten years, had university degrees or were studying for accountancy or law qualifications; they reported being part of a cohesive community,

who could draw on each other for support, and who were well structured, with the vast majority having strong religious (Christian) beliefs and attending church each week, where community relationships were further strengthened. The school teachers reported these parents taking a keen interest in their children, turning up to school meetings, etc. Thus it is perhaps not surprising that the level of symptoms of anxiety/depression/fatigue found in the mothers was half that of the nation as a whole. Likewise, and crucially for this study, the children living in this very poor area (by UK standards) were not much more troubled than the national average. In particular, the more detailed parental interview revealed that, as a group, they were indeed no different from the typical level found in the nation as a whole for children of that age. This is not an artifact of parental perception, since teacher questionnaire ratings also showed close to normal levels of difficult behaviour.

A crucial lesson is that, to reach children and families in need, geographical targeting is inefficient. By far the majority of those at risk in the country do not live in small pockets of poverty and, even in such pockets, the majority do reasonably well.

Take-up of services

Use of current mainstream NHS services (question 2)

This study compared take-up rates and outcomes of two types of service in a seriously disadvantaged inner-city population. It found that the current NHS services were used by 10 per cent of the population studied. Given that the services are designed to be used for children with more severe difficulties, this level could be seen as appropriate and sustainable financially. However, they were used three times less by black minority ethnic groups, which suggests that further work needs to be done to see whether this population would like more acceptable and user-friendly services, and what changes would need to happen to make this come about.

Take-up rates for the parenting programme (question 3)

In contrast, the new parenting programme was taken up by two-thirds of studied parents who were offered it, an extremely high rate, given the high level of demands and stresses on the population. This rate is far higher than for most preventive interventions, which typically attract around 20 to 40 per cent of the population. We attribute the high engagement rate to a number of factors:

1 the endorsement of the programme by the school

2 the appeal of the programme to parents because it addressed major areas of a child's life that affect their future life chances, namely their ability to tackle reading (an essential gateway to access all school subjects) and their social behaviour (an essential ability to get on well with others, both for forming harmonious relationships at home and for building friendships outside it)

3 the assiduous approach by the intervention team at the schools, with regular coffee mornings held by friendly, approachable staff.

Cost (second part of question 3)

The programme cost around £1,300 per child, or less than £100 per session. Implementation in regular practice could cost far less to an education or health authority, or children's trust, since staff already in post could be redeployed to run groups (e.g. SENCOs), voluntary workers could be trained as co-leaders and crèche costs reduced by using nurseries attached to primary schools. Long-term cost benefits of effective parenting programmes are likely to be considerable, since antisocial behaviour is very expensive to society in the long term.

Reasons given for not taking up the programme or dropping out (question 4)

A separate qualitative study of 22 non-engagers (who declined the invitation to attend) and non-completers (who initially attended but then dropped out prior to completion – attending less than four sessions) found that the overwhelming reason given was being too busy because of multiple commitments. While this could have been a socially acceptable excuse to cover that the parents simply didn't want to come, the interviewer ascertained that they were indeed incredibly busy, with the majority being single parents with young children and typically a job too, plus an evening course. Similar reasons were given by those who attended few sessions. Here the pattern wasn't of coming and then stopping, but rather coming, getting busy with other commitments and then coming back (Scott *et al.*, 2006a, forthcoming).

Accessibility and acceptability for minority ethnic families (question 5)

Unlike for the current NHS services, the programme was taken up by a high proportion of parents from ethnic minorities, equal to the proportion in the local population. This shows it was accessible. The consumer satisfaction survey showed it was acceptable. We attribute this to the high-quality personal skills and reputation of the team of three who ran the front-line intervention, and the planned arrangement for strong ongoing support and supervision for them by a highly experienced practitioner back at base. All the front-line staff were women, were highly experienced with children and included a black African-Caribbean member. These factors may have contributed to mothers feeling comfortable and trusting of the team as likely to be able to understand their predicaments and help them.

Acceptability to agencies and sustainability

All four schools approached allowed the intervention project to take place, and it was generally well accepted; headteachers saw it as helping them achieve their own goals, such as better literacy attainment, less antisocial behaviour and more parental involvement. The programme didn't place any major demands on schools, although screening questionnaires had to be filled in and a room provided. Four-fifths of the parents of children whom the screened indicated were at high risk agreed to take part in the study, a high proportion given that the majority were in full-time work and no payment was offered for attending. We attribute this good recruitment rate to the study (as opposed to the intervention, which was managed quite separately) and to the ongoing efforts to build good relations with schools and parents, who were approached on the positive basis of giving their child a good start in life, rather than the negative one of being at risk of delinquency and failure. The sustainability of programmes like this is indicated by the fact that the SPOKES programme has now been adopted by the local authority in the original four schools and also in three more, also in disadvantaged areas.

Parenting

Ethnic differences in parenting styles (question 6)

While there was no difference in the number of instructions or commands given, the white British gave about twice as many child-centred comments (such as attention

and praise) than the African and African-Caribbean parents; they also scored considerably higher on the measure of sensitive responding. Because this finding was from direct observation, it is robust. But its significance for the child is not clear – the rates of child antisocial behaviour were not any higher for those in minority groups, whether measured by parent report, teacher report, or direct observation.

Changes in parenting (question 7)

Despite the limitations of a third of the intervention group not attending at all, the immediate target of the programme, the parent's way of relating to their child, changed. Overall, there was increased sensitive responding to the child's signals and needs – the parent was more involved with the child, taking part in their activities more, following on their overtures by taking up the theme, be it helping the child build a model, recognising that they were stuck and helping out, or elaborating on a conversational comment. This core process of relating to a child has been shown to underpin attachment security from the earliest years of infancy, and these patterns of relating that are set up in the child continue to be evident right up into adulthood (Cassidy and Shaver, 1999). As noted in the introduction, similar qualities of warmth, acceptance and involvement by the parent underpin the child's self-esteem, social skills and intellectual attainment. Similarly, the amount of attentive and encouraging comments to the child went up.

Interestingly, the amount of directions did not go down, despite this being an aim of the parenting programme, which aimed to lead the parent to give fewer instructions so the child could develop more autonomy. Parenting programmes with parents of very antisocial, clinically referred children generally do lead to a reduction in instructions (McMahon and Forehand, 2003), so the fact that this did not occur here may be because the children were not especially antisocial so did not require much directing, or because of an inadequate 'dose' of the programme, i.e. because the parents did not get sufficient practice in changing their style of relating in this regard. This possibility is made less likely by the fact that, in the longer intervention of the previous preventive trial, the number of directions didn't decrease either – it could be that the group leaders didn't emphasise this aspect much.

Interviews with the parents showed an increase in calm discipline and a reduction in criticism of the child, suggesting that the changes in parenting were more widespread than just the increase in attending and sensitive responding found at observation. To our surprise, parents didn't report giving more praise to their children.

This is the first study we are aware of to show that a behaviourally based programme, with its foundations in social learning theory, can change not just individual parenting behaviour acts but also sensitive responding, a quite different parenting concept derived from attachment theory, which is a measure of a warm, reciprocal relating style that is known to be related to child attachment security and emotional well-being. This could have important policy implications, since there have been proponents for behaviourally based approaches who have decried attachment approaches, and vice versa. This study shows that the impact of an emotionally aware, behaviourally based programme includes affecting the fundamental relating style of the parent, which should make it more acceptable to a far wider range of therapists and counsellors, and so make it more implementable by policy makers.

Ethnic differences in responsiveness to the programme (question 8)

Despite the considerable cultural differences in beliefs about how children should be disciplined and brought up, and the differences in parenting practices found by observation, there were no differences across ethnic groups in the amount of change found due to attending the programme – it was equally effective in changing practices. This is a finding of major importance for those planning to offer parenting programmes in areas with minority ethnic populations.

Attendance issues

Number of sessions attended and outcome (question 9)

Although initial enrolment was excellent, the subsequent attendance for those who enrolled was more modest, with the mean figure being seven sessions out of a total possible 16; because we wished to know what the impact of the intervention would be on the total population offered, all our main analyses were irrespective of attendance, so the mean figure was five sessions attended because of a third of the parents not attending any. For many of the outcomes, this was crucial since, when the results were calculated for those who had attended for more than five sessions, the effect was substantial. This is a major finding of this study. A consequent conclusion is that preventive interventions need to find ways to raise attendance levels.

Of course, it could also be that the type of parents who attend more sessions are those who are more likely to do well anyway, which then raises the possibility that, where there were no effects on the 'intention to treat' analysis but there were on the 'per protocol' analysis, this was due not to the intervention but to different types of families being selected. However, we think this is unlikely since, in the previous, longer version of this intervention, which was otherwise the same, parents attended a mean of 14 sessions (out of 26 offered) and this led to sizeable changes in most parenting measures, child antisocial behaviour, child attention and child reading. This was found in a similar randomised controlled trial, also in a South-East London borough (Lambeth). Therefore we know that it isn't the case that the intervention itself doesn't work. We conclude that it is probable that a minimum 'dose' of around ten sessions need to be attended to get change reliably in most of those attending.

Strategies to increase attendance

Ways of achieving higher attendance could include simply explaining the usefulness of prolonged attendance. However, more pressing reasons than not realising the need to attend most sessions were elicited by the qualitative study of non-completers, who, generally speaking, did not say they weren't interested in the programme, but rather they were simply too busy. Now, of course, it could have been they were just being polite. But, first, the interviewer who asked them about this was independent of both the intervention team and the evaluation team, so any criticism would not have been of the interviewer. Second, the objective facts about the parents' lives supported just how busy they were. Often they had one or sometimes two jobs, four or five children and half were lone parents. They therefore, in our opinion, really didn't have space in their lives for further time-consuming activities. It is hard to think of easy ways around this. Solutions could include running evening groups, although with several young children to put to bed, this might not increase attendance greatly; another possibility would be to run groups on Saturday mornings, as was done in the large American FasTrack project (Conduct Problems Prevention Research Group, 1999). Other approaches that could be used include home visits, paying parents for attendance or offering other rewards, getting teachers to deliver some of the programme and so reinforce the message, and getting hold of more fathers.

A more radical solution would be to change the culture so that part of workplace training opportunities would include attending such courses. In Australia, the Triple P parenting programme has been delivered in the workplace with the support of enlightened employers – there is good evidence that one of the main stressors affecting work performance is children, so reducing this is likely to lead to a happier and more productive workforce, the argument runs (Sanders and Turner, 2005).

Child effects

Changes in the child (question 10)

On the most objective measure, direct observation, children improved their ability to concentrate; using this method of measuring, no significant antisocial behaviour was seen. However, parental perception as measured by questionnaire and parental accounts of daily life elicited by careful, detailed interviews did not show change, and nor did teacher questionnaires or a reading test. This is at first sight puzzling, since, after all, parenting changed and so one would expect child behaviour to follow this.

The first possibility to explain lack of child improvement on these measures is that the instruments weren't sensitive to change. However, in the two previous trials, the same parent measures showed clear changes, albeit in a more troubled population of children.

A second possible reason no change was seen is because nearly all of the children had no significant antisocial behaviour to get rid of in the first place. Thus they were not lying or stealing, did not have tantrums, were not disobedient, seldom refused to go to bed and were not aggressive to people or destructive of property. There was therefore very little room for improvement for these children. The screen positive children, while having somewhat worse behaviour, still started in the normal range, and they too showed no improvement. Because there were rather few measures taken that could change in children who were already doing well, and because attending ability improved and the children were now experiencing a clearly more positive relationship from their parents, we believe it would be wrong to conclude that the children did not benefit from the programme. This is in contrast to interventions that might lead to the parents expressing satisfaction with the service, but not to measurable change in either parenting or any aspect of child functioning.

A third possibility is that a longer 'dose' of the intervention may have then led to detectable change on more measures. The 'dose' of intervention received was also almost certainly inadequate to lead to a measurable improvement in reading ability – with a mean of only five sessions attended overall, of which only 40 per cent were for reading, that leaves on average only around two sessions devoted to special skills for reading with the child (and three to improving the relationship). As noted above under parenting change, the same intervention given over a longer time in the previous trial did lead to major changes in child functioning. This seems to be a likely explanation, and is a major implication of the study, which fits in with the findings on dose effects on parenting and child attending. Put another way, the shortened course

was enough to change parenting and a measure of child behaviour that can show change when starting in the normal range, i.e. attention, but was not long enough to change reading ability.

A fourth possibility is that the parents in both arms were prone to under-report problems at the outset, but at follow-up those in the intervention arm became more aware of their child's difficulties because of being trained, with the help of videotapes, to observe and monitor them. There is some evidence for this, in that child attention on task showed improvement on direct observation, but not on parent account. However, this would not account for the lack of change in reading scores, which requires other explanations (see above).

A fifth possibility is that the intervention wasn't delivered in a skilled enough way. This is an important consideration since our previous work found a strong effect of quality of delivery of the programme on child outcomes (Scott *et al.*, 2006c, forthcoming). However, the principal group leader was very experienced, received weekly supervision and had taken part in the first two trials that had shown good effects, so this explanation seems to us to be unlikely. Also, the fact that parenting and child attention changed is evidence against it. Proof would require independent rating of the videotapes of group sessions. These have been kept, so this remains a possibility for the future.

In summary, it is probable that the intervention was attended for long enough to change some aspects of child behaviour but not all.

The importance of using measurement methods that detect change

If this study had not used direct observational methods available, it would have wrongly concluded that the intervention had no effects. Therefore it is crucial to use multiple methods to measure change and not, as it were, to put all your eggs in one basket. In future, intensive evaluations of interventions should include direct observation if at all possible, and cover parent as well as child outcomes.

Implications for policy

1 Taking an approach where the whole population is screened is to be encouraged, as it is feasible practically and allows the identification of those in need. They can then be offered a service; those who are not accessing the service are identified,

so alternative strategies can be tried to engage them. Equally, screening means that interventions are not 'wasted' (given that they are expensive) on those who do not need them. Screening also allow one to assess whether a programme is improving matters at a community-wide level, not just for certain individuals who turn up for a service.

2 A high proportion of parents from all ethnic backgrounds are prepared to enrol in parenting programmes despite living in highly stressed circumstances, provided the intervention is well planned and supported; adding a reading component helps universal appeal.

3 To get substantial changes across a wide range of outcomes, strategies need to be in place to help parents attend a reasonable number of sessions, say around ten. To achieve this may require individual home visits in some cases.

4 Given the relatively high cost of such programmes, it is wasteful to offer them to children who are functioning well. Such children are at lower risk of social exclusion and so have less need; they also benefit less.

5 Targeting by geographical area is an inefficient way of recruiting those in need. It is more effective, and more cost-effective, to use a simple questionnaire screen and then select only those in need.

6 Intervention projects should routinely gather simple outcomes data, such as attendance, satisfaction and, crucially, questionnaires on child outcomes. Only this way will less effective practice be uncovered, which then allows for improvement.

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Appendix 1: Statistical issues and detailed analyses

From Chapter 2: Methods

The 'design effect' (see p. 23 of main report)

Children were selected into the intervention or comparison condition according to classroom. Now it may happen that children in the same classroom are more similar to each other than to the children in other classes. This can happen for various reasons – for example, when choosing which children go into a class, a headteacher may wish the rather more challenging pupils to be allocated to a more experienced teacher. It is necessary to account for this potential similarity when analysing the data. Cluster randomised designs in which the randomisation is conducted not at the individual level but instead at a higher-order group level – such as classroom – are known to be less efficient statistically than designs that randomly assign individuals. The impact of this 'inefficiency' is referred to as the *design effect*. It is calculated as $DE = 1 + (m–1)\rho$, where m is the mean number of children per cluster and ρ is the intraclass correlation (the degree of similarity explained by classroom membership). DE, also referred to as the *variance inflation factor*, is incorporated into analyses of the significance and the size of the effect of the intervention. It also affects the amount by which the sample size would need to be increased when the design uses the cluster randomisation, above that required for an individual randomised trial. If there is considerable clustering or similarity among individuals, then the intraclass correlation is high and the design effect is substantial. When designing studies that use a cluster randomised design, estimates of the design effect have to be made since, in practice, the magnitude of the intraclass correlation is not known a priori.

Based on previous reports, when calculating sample size, we anticipated that the intraclass correlation for the variables of interest, parent–child relationship and child outcome, would be small. That is, we anticipated that children in the same classroom/condition would not show much resemblance to one another. Instead, parent–child relationship quality and child outcomes were conceptualised as primarily individual-level characteristics. Put another way, we did not expect that knowing which class a child was in would say much about the child's behaviour or the style of the parent–child relationship. This was based on findings from prior work, which showed that classroom similarity was very small.

Calculation of sample size

We designed the trial to detect a minimum important difference in effect size of 0.5 sd on the primary outcome measure. To be detected with 80 per cent power at α = 0.05 would require a sample of 94 if randomisation were at the individual level; because it was, however, at classroom level, allowance has to be made for the restricted variance this introduces. Assuming an intraclass correlation of 0.05 within clusters, and a minimum of eight clusters (four schools, at least one classroom in each condition) after allowing for the variance inflation factor, this would require a sample with a mean of 14 participants per cluster, giving a total sample size of 120 (Murray, 1998). In the event, 174 were recruited.

Impact of the clustered design on results (see p. 31 of main report)

The results show that nearly all of the variation in parent–child relationship quality and child outcomes was observed at the individual level. The following intraclass correlations were observed for measures taken prior to intervention: *parenting measures by direct observation*: sensitive responding: 0.000; praising: 0.000; positive attending: 0.000; *parenting measures by interview*: withdrawal of privileges/ short time out: 0.000; smacking: 0.000; use of rewards: 0.16; *child outcome measures by direct observation*: attention: 0.004, *child measures by interview*: child antisocial behaviour on the PACS: 0.004; *child measures by questionnaire*: total deviance from the parent completed SDQ: 0.13; total deviance from teacher completed SDQ: 0.000; conduct problems from parent completed SDQ: 0.12; conduct problems from teacher completed SDQ: 0.00.

The consistent pattern of minimal to zero intraclass correlations on most measures means that there was little clustering of variance at the classroom level; accordingly, virtually all of the observed variation in parent–child relationship style and child behaviour was at the individual child level. In terms of the design effect, then, the cost of the randomised cluster design was, in this case, rather small. The largest DE was 1.64 (based on an average cell size of 5, using the formula set out above) and was found for the measure of praise and rewards.

In the results we analysed the data using MLwiN to account for the cluster randomised or nested structure of the data.

The definition of what is statistically significant is usually defined as the likelihood that the finding observed would happen less than one chance in 20 (i.e. a *p* value of

0.05). The definition of clinically significant is somewhat less consistently defined. We follow the convention that a finding is clinically significant if it is associated with an effect size (ES) of approximately 1/3 standard deviation or more. This is, a change in the mean that is equivalent to one-third of the standard deviation. That is just a convention, however, and the determination of 'how big' an effect needs to be before it should be integrated into practice is complex and likely to depend on several factors related to the study and the clinical population or practice to which the findings pertain.

The primary focus in the analyses was whether or not the intervention has a statistically significant and clinically meaningful impact on the parent–child relationship and child outcomes. However, it is also necessary to consider several other factors in the analyses, including child gender, ethnicity and age. Of these factors, ethnicity was of particular interest because of the ethnically diverse nature of the sample. In addition, because the parent–child relationship may have different characteristics across ethnic/racial groups, the effectiveness of a preventive intervention may similarly vary across ethnic/racial groups. Analyses of differences among ethnic groups when they were measured prior to any intervention bear this out.

From Chapter 4: Effect on parenting

Changes in parenting practices due to the intervention (see page 33 of the main report)

As stated in the analysis strategy part of the methods section, data were analysed using a regression model that accounts for the cluster randomised design. In this approach, follow-up scores are predicted from pre-treatment scores and intervention group membership. That allows us to examine if, after controlling for the level of parent–child quality before treatment, the intervention was associated with an increase in measures of positive relationship measures and/or a decrease in negative relationship measures. In each analysis, we include child age and gender and ethnicity; supplemental analyses examine interactions between intervention and ethnicity to assess if the intervention had a different impact on families of different ethnicities.

Sensitive responding

Results from the regression analyses for observed parental sensitivity are provided in Table A1.1.

Table A1.1 Effect of intervention on observed sensitive responding in all parents (A) and according to sessions attended (B)

	(A) All cases, irrespective of attendance		(B) Impact of attendance	
Fixed effects				
Intercept	–1.94	(5.17)	–1.98	(5.01)
Sensitivity, T1	0.65	(0.09)**	0.64	(0.09)**
Male	–0.04	(0.61)	0.03	(0.59)
Age	0.08	(0.07)	0.08	(0.07)
White British	–0.03	(0.80)	–0.20	(0.78)
Intervention: all cases	**1.42**	(0.72)*		
Intervention: attended 0–4 sessions			**0.71**	(0.77)
Intervention: attended 5+ sessions			**2.54**	(0.86)**
Random effects				
Classroom	3.03	(1.52)*	2.91	(1.43)*
Individual child	4.62	(1.28)**	4.32	(1.20)**
–2 X loglikelihood	370.90		366.18	

Notes:
For fixed effects, estimates represent regression coefficient with standard error.
Figures in bold highlight intervention effects.
* p *<0.05.*
** p *< 0.01.* n *= 77.*

Findings show that there was substantial stability of parental sensitivity from pre-treatment to follow-up. That is, a one-unit change in sensitivity at time 1 was associated with a 0.65 increase in sensitivity at time 2 (on a seven-point scale). Notwithstanding the substantial stability, however, the intervention was associated with a significant increase in observed parental sensitivity six months after the intervention ended; the effect of the intervention was to increase parental sensitivity 1.42 points on a seven-point scale, an effect size of 0.4 standard deviations. (A standard deviation is a way of comparing the magnitude of the change; conventionally, 0.2 sd is a small effect, 0.5 is moderate and 0.8 is large. In prevention trials, results are usually small, or moderate at best; in clinical trials sometimes they are large.) Child age, or gender, or ethnicity was not associated with change over time. Follow-up analyses showed that the effect of the intervention did not vary significantly across ethnic groups, that is, there was not a significant interaction between intervention group and ethnicity (whether ethnicity was coded as white British vs. other, or according to finer distinctions).

The separate analysis in the right-hand column of Table 7 tests the effect of attending five or more sessions rather than the simpler intervention or no effect. For sensitive responding, the amount of intervention received had a substantial effect on the amount of change observed. The analysis shows that those parents who received nought to four sessions of the intervention exhibited a non-significant positive increase in sensitive responding compared with those who did not receive the intervention. However, those who received five or more sessions showed an increase of 2.54 (p <0.01), an effect size of 0.7 standard deviations, a substantial increase given the seven-point scale and the marked stability over time.

Child-centred parenting

See results in Table A1.2.

Table A1.2 Effect of intervention on (A) observed child-centred parenting and (B) specific ethnic variations

	(A) Change over time by ethnic group# and main effect of intervention		(B) Different impact of intervention by ethnic group+	
Fixed effects				
Intercept	21.86	(10.94)	19.94	(10.32)
Child-centred, T1	0.25	(0.11)*	0.33	(0.11)**
Male	–2.25	(1.35)	–1.60	(1.25)
Age	–0.21	(0.16)	–0.19	(0.15)
Black African	–3.47	(1.76)*	–4.13	(2.19)
African-Caribbean	–2.35	(2.10)	–4.74	(2.66)
Other minority ethnic	–0.96	(2.61)	–12.64	(4.59)**
Intervention	**3.44**	(1.37)*	0.51	(2.58)
Intervention: black Africans			1.76	(3.05)
Intervention: African-Caribbeans			5.49	(3.72)
Intervention: other minority			15.83	(5.24)**
Random effects				
Classroom	0.00		4.25	(5.50)
Individual child	31.43	(5.07)**	23.62	(6.19)**
–2 X loglikelihood	483.99		474.12	

Notes:
For fixed effects, estimates represent regression coefficient with standard error.
Figures in bold highlight intervention effects.
* p *<0.05.*
** p *<0.01.* n *= 77.*
\# *For the whole sample, in both arms of trial – so not the the differential intervention effect by ethnic group.*
\+ *In comparison to white British change.*

The second observational variable we considered was child-centred parenting, that is attentiveness to the child and involvement in their world assessed by the number of times the parent attended to the child by commenting on what they were doing, encouraging them, or praising them. Results are given in Table A1.2. In this case, we did observe a significant variation between scores of those belonging to minority ethnic groups in comparison to white British. Table A1.2 includes the four-level ethnicity variable; the control condition is white British. The results indicate that there is significant continuity of child-centred parenting over the 12-month period of assessment. Nevertheless, parents in the intervention group exhibited a significant increase – approximately half a standard deviation in child-centred parenting. The analysis also showed that parents in the black African group (all parents across intervention and controls, thus a general time trend, not an intervention effect) showed significantly less change in child-centred parenting over the year than the white British group.

A supplementary analysis (not shown) examined if there was an effect of intervention dose, again defined as nought to four versus five or more sessions. Compared with parents in the comparison group, parents who received nought to four sessions were more likely to exhibit an increase in child-centred parenting over time (2.85 [se 1.52]), but the effect was about doubled in those parents who attended five or more sessions (4.50 [se 1.82]).

The right-hand column in Table A1.2 shows the findings from examining the hypothesis that the effect of the intervention differed significantly across ethnic groups. Adding the intervention by ethnicity interactions resulted in a significant overall improvement in the model. Results show that the intervention had a significantly greater effect in the minority ethnic ‘other’ group compared with the white British group; in fact, although not always significant, it is worth noting that the intervention had a more positive effect in all minority groups compared with the white British group. The small numbers of families in the ‘other’ group suggest that these results should be interpreted cautiously.

Child-directive parenting

Another widely used index of parenting in the intervention literature is child-directive parenting. Table A1.3 displays the regression analysis results. There was no evidence that the intervention led to a decrease in observed child-directive parenting. Further analysis (not shown in table) indicated that there was no dose effect (there was still no intervention effect when we examined those who attended five or more sessions). Also, there was no evidence of an interaction between intervention and ethnicity – the intervention had a non-significant effect across all ethnic groups.

Table A1.3 Effect of intervention on observed child-directive parenting

	Change over time by ethnic group# and effect of intervention	
Fixed effects		
Intercept	74.37	(85.06)
Child-directive, T1	0.48	(0.07)**
Male	6.29	(10.43)
Age	–0.72	(1.24)
Black African+	18.32	(12.71)
African-Caribbean+	9.29	(15.23)
Other minority ethnic+	6.68	(18.92)
Intervention	8.86	(11.28)
Random effects		
Classroom	424.79	(392.29)
Individual child	1550.27	(412.97)**
–2 X loglikelihood	801.56	

Notes:
For fixed effects, estimates represent regression coefficient with standard error.
* p *<0.05.*
** p *<0.01.* n *= 77.*
\# *For the whole sample, in both arms of trial – so not the differential intervention effect by ethnic group.*
\+ *In comparison to white British change.*

Findings from interview

Use of praise and rewards

Table A1.4 displays the regression analysis results for parental report of the use of praise from the semi-structured interview. After accounting for continuity of praise from pre-treatment to follow-up six months after the end of the intervention, there was no evidence that the intervention increased the use of praise, as assessed using this method. Interestingly, as reported above, the *observed* measure of positive attends, which is another index of the use of positive comments and praise, did show a strong intervention effect. Supplementary analyses (not shown in table) of the interview measure of praise indicated that there was no greater effect among those who attended five or more sessions; neither was there any evidence that the intervention was differentially effective across ethnic groups.

Use of calm discipline

Table A1.4 displays the regression analysis results for calm discipline. This term refers to two ways of disciplining a child in response to unwanted behaviour – the withdrawal of privileges and sending the child for a short time to a boring place. The intervention was associated with a significant increase in the use of calm discipline, six months after the intervention ended. Irrespective of intervention, for the whole sample, we also found that parents with boys were more likely to show an increase in the use of positive discipline over time, and that African-Caribbean and black African families were less likely than white British families to increase their use of appropriate discipline over time.

Table A1.4 Effect of intervention on the reported use of praise and rewards, and of calm discipline

	Change by ethnic group# and effect of intervention			
	Praise and rewards		Calm discipline	
Fixed effects				
Intercept	0.56	(1.45)	–0.23	(1.51)
Initial score	0.48	(0.07)**	0.51	(0.07)**
Male	0.01	(0.20)	0.51	(0.24)*
Age	–0.72	(1.24)	0.00	(0.02)
Black African+	0.07	(0.35)	–1.14	(0.31)**
African-Caribbean+	–0.22	(0.46)	–1.23	(0.38)**
Other minority ethnic+	–0.30	(0.51)	–0.74	(0.46)
Intervention	0.39	(0.40)	0.67	(0.32)*
Random effects				
Classroom	0.00		0.94	(0.34)**
Individual child	1.46	(0.18)**	1.84	(0.28)**
–2 X loglikelihood	430.81		612.61	

Notes:
For fixed effects, estimates represent regression coefficient with standard error.
* p *<0.05.*
** p *<0.01.* n *= 77.*
\# *For the whole sample, in both arms of trial – so not the differential intervention effect by ethnic group.*
\+ *In comparison to white British change.*

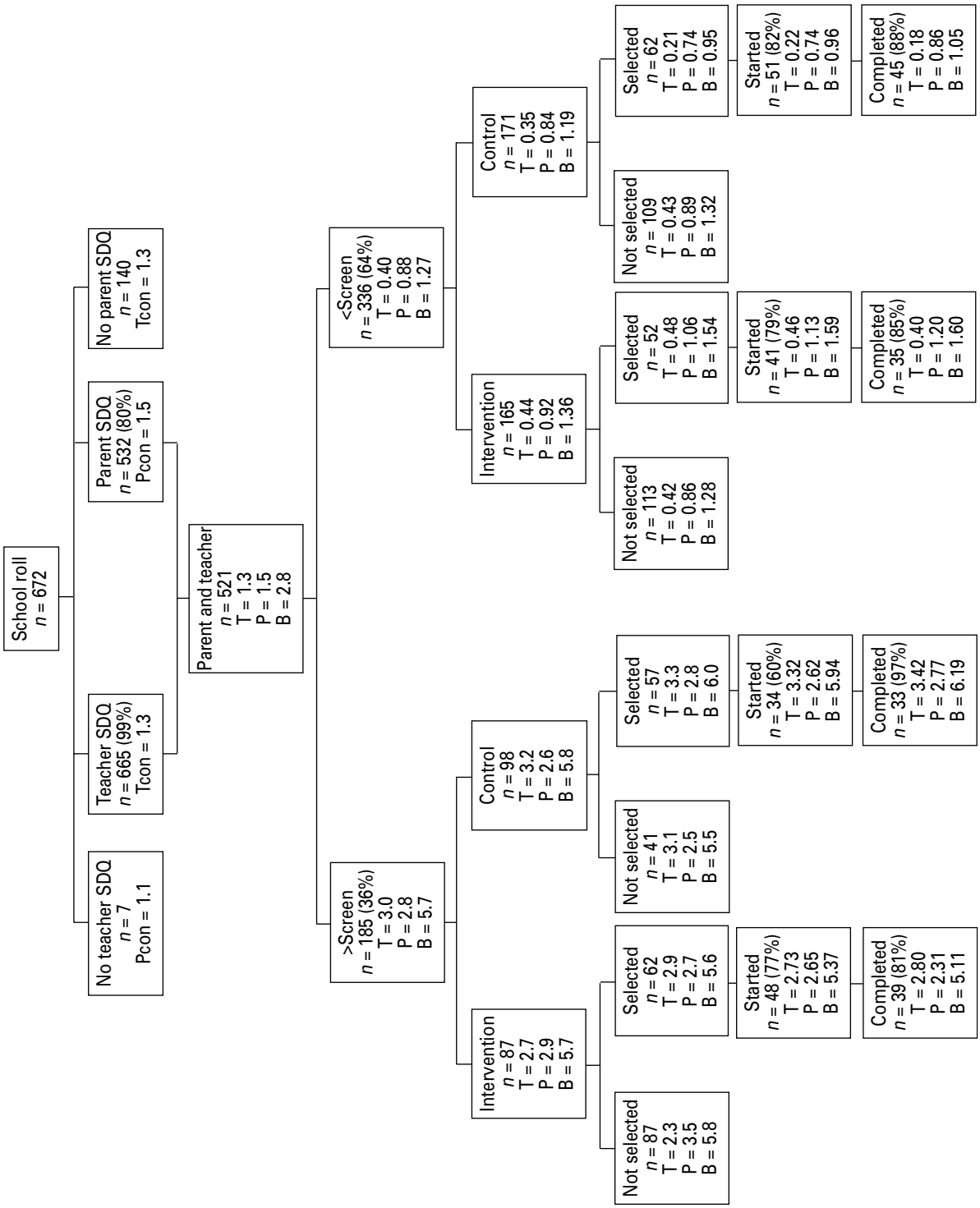
Supplementary analyses (not shown) showed that there was no clear evidence of a dose or intensity effect. That is, compared to families receiving no intervention, families who attended nought to four sessions had an increase of 0.61 (0.35) and families receiving five or more sessions exhibited an increase of 0.78 (0.39). There was not a significant interaction between intervention and ethnic group; this is of note given the strong main effects of ethnicity on change in discipline over time.

Table A1.5 Effect of intervention on child outcomes

	Attention (observed)	Antisocial behaviour (parent interview)	Antisocial behaviour (parent SDQ)	Antisocial behaviour (teacher SDQ)	Reading (test)
Fixed effects					
Intercept	18.28 (3.57)**	0.16 (0.28)	3.52 (1.25)*	1.68 (1.01)	23.64 (18.58)
Pre-score	0.45 (0.08)**	0.64 (0.05)**	0.33 (0.07)**	0.47 (0.06)**	1.45 (0.14)**
Male	–1.76 (0.44)**	–0.03 (0.05)	0.02 (0.20)	0.10 (0.17)	–3.44 (2.48)
Age	–0.09 (0.05)	0.00 (0.00)	–0.02 (0.02)	–0.01 (0.02)	–0.06 (0.27)
Black African+	0.39 (0.53)	–0.07 (0.06)	–0.57 (0.25)*	–0.27 (0.21)	6.51 (3.11)*
African-Caribbean+	–0.07 (0.66)	0.01 (0.07)	–0.04 (0.31)	–0.28 (0.26)	3.01 (3.81)
Other minority ethnic+	–0.12 (0.80)	0.04 (0.09)	–0.78 (0.37)*	–0.56 (0.31)	5.80 (4.56)
Intervention	0.87 (0.44)*	0.10 (0.05)*	0.29 (0.21)	0.20 (0.17)	–1.54 (2.86)
Random effects					
Classroom	0.00 (0.00)	0.00 (0.00)	0.07 (0.15)	0.03 (0.10)	41.18 (28.07)
Individual child	3.28 (0.53)**	0.08 (0.01)**	1.52 (0.22)**	0.99 (0.15)**	170.5 (29.3)**
–2 X loglikelihood	309.89	46.45	531.25	425.74	1114.65
n	77	162	161	149	136

Notes:
For fixed effects, estimates represent regression coefficient with standard error.
* p *<0.05.*
** p *<0.01.* n *= 77.*
\# *For the whole sample, in both arms of trial – so not the differential intervention effect by ethnic group.*
\+ *In comparison to white British change.*

Appendix 2: Participant flow chart



Notes:
T = the score on the SDQ conduct problems scale (range 0–10); P = the score on the SDQ parent conduct scale (range 0–10); B = the sum of teacher and parent SDQ conduct scale scores.
In the high-risk intervention group, of the 25 who were not selected, 20 were not approached because they were not put up by the random allocation process, three were not selected because of lack of usable English and two were not selected because of severe developmental delay. In the high-risk controls, of the 41 not selected, two were because of lack of usable English and one because of severe developmental delay. In the low-risk intervention group, of the 113 not selected, two were because of lack of usable English and one because of severe developmental delay. Of the 109 low-risk controls not selected, three were because of lack of usable English and two because of severe developmental delay. The numbers of those who were selected by randomisation to be interviewed but declined the offer can be deduced from the difference between the number selected and the number who started in each of the four groups; thus, for example, in the high-risk intervention group, this number equals 62 minus 48 = 14.