

# Which type of parenting programme best improves child behaviour and reading?

Follow-up of the Helping Children Achieve trial

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## About the Nuffield Foundation

The Nuffield Foundation is an endowed charitable trust that aims to improve social well-being in the widest sense. It funds research and innovation in education and social policy and also works to build capacity in education, science and social science research. The Nuffield Foundation has funded this project, but the views expressed are those of the authors and not necessarily those of the Foundation. More information is available at [www.nuffieldfoundation.org](http://www.nuffieldfoundation.org)

## Foreword

Helping Children Achieve (HCA) is a randomised controlled trial designed to test the effects of parenting interventions aimed at improving children's conduct and literacy. Two different interventions were tested on 5-7 year-olds; one designed to improve behaviour and relationships, and the other designed to improve literacy. A third group received a combination of both interventions. The effects were measured 9-11 months after the interventions began, and showed that children in all three groups saw a reduction in disruptive behaviour compared to the control group, but only those who received the behaviour intervention saw an improvement in their reading. These findings were published by the Department for Education (DfE) in 2012.

This report presents findings from a follow-up study which measured outcomes of children in the HCA trial two years after the intervention began, when they were aged 7-9 years-old. Funded by the Nuffield Foundation and led by Professor Stephen Scott, the study found that the effects identified in the original trial were sustained over the longer time period. The report also summarises the findings from the original HCA Trial.

The findings show that tackling problem behaviour at a young age can have lasting effects, not only on children's behaviour but also on their reading. Conversely, the intervention specifically designed to improve literacy was unsuccessful. This finding is not what was predicted and demonstrates just how vital it is to ensure large scale interventions are properly evaluated. The lack of robust evidence on the effectiveness of parenting interventions has been an area of concern for the Foundation, not least because they often require significant public investment. So we are pleased to fund projects such as this one that aim to provide a more reliable assessment of the efficacy of these interventions, both in the short and longer term. In addition, it spans our interests in family policy, child development and educational outcomes.

Another valuable message emerging from the study is that improvements in children's behaviour and reading ability were seen equally strongly across the board, regardless of factors such as level of parental education, parental mental health, and whether children lived in a one or two parent household. This is important because it shows the potential for narrowing the attainment gap between children from different backgrounds and consequently for reducing social inequality. It also demonstrates that although parents may not seek help themselves in relation to their child's behaviour or reading, they are nevertheless prepared to engage and participate when the opportunity is presented.

Finally, I would like to extend my thanks to the research team for undertaking this project, which offers a valuable contribution to our understanding of the potential of high quality parenting programmes to improve behaviour and literacy in children at risk of poor outcomes.



**Teresa Williams**  
**Director of Social Research and Policy**

## **Executive Summary**

### **Study aims**

This study aimed to find out which type of parenting programme would best improve the longer-term social behaviour and reading skills of young children at risk of poor outcomes due to antisocial behaviour.

### **Background**

Three factors that reliably predispose children to underachieve and become socially excluded in childhood with enduring effects into adulthood are **(1)** experiencing suboptimal parenting, such as lack of praise and encouragement, being subject to overly harsh, inconsistent discipline **(2)** behaving disruptively and **(3)** being a poor reader. Early intervention in the form of parenting programmes delivered when children are in the initial stages of school may help. However, it is not known whether it is better for programmes to help parents support their children's behaviour, reading, or both. The original Helping Children Achieve (HCA) trial – funded by the Department for Education - set out to answer this in the short-term, 9-11 months after the trial began and indicated promising results. But we wanted to see if these were sustained beyond the first year, and were delighted that the Nuffield Foundation awarded us grant-funding for a follow-up study when the children were 7-9 years old. This report summarises the findings from the original trial study and then reports the new findings a year later, two years after the trial began.

### **Methods**

#### *Sample*

2655 families with children aged 5-7 in a disadvantaged inner London Borough and a South West city were successfully screened to assess levels of child disruptive behaviour: slightly under half (1174, 45%) met the predetermined cut-off, reported by either parent or teacher. A third of these (395) expressed interest in a research trial, 210 families eventually took part.

#### *Interventions*

The parents were randomly allocated to one of four conditions:

1. A programme to improve behaviour and relationships - the Incredible Years (IY)
2. A programme to improve literacy - the Supporting Parents on Kids Education in Schools programme (SPOKES)
3. A combined programme in which the IY programme was delivered first, followed by the SPOKES programme (COMBI)
4. A control condition in which parents could call a telephone helpline to describe any concerns they had about their child, after which they were directed to the most appropriate local service and given information on how to access it (SIGNPOSTING)

Attendance was good: three quarters (72% to 76%) of the parents attended half or more of the sessions offered, for each of the three interventions.

## Measures

The two primary outcome measures were the child's level of anti-social behaviour as measured on the Parent Account of Child Symptoms (PACS) semi-structured interview and the child's word-reading ability as measured on the British Ability Scales. There were three secondary measures of children's outcomes: two parent-reported measures of children's difficulties and conduct problems, and a reading comprehension test. In addition, we measured parenting behaviour using the Alabama parenting questionnaire and an in-house semi-structured interview of parenting practices.

The measures were collected at three time points:

1. At enrolment, before any intervention had taken place ('Pre')
2. 9-11 months following enrolment, after the interventions had taken place ('Post')
3. A year later, almost two years after enrolment ('Follow-Up')

All researchers doing the assessments were blind to group allocation status.

## Predictions

At the outset of the study, we expected to find changes in *children* as follows:

- children of parents allocated to the Incredible Years relationship programme would demonstrate an improvement in their behaviour, but not reading achievement;
- children of parents allocated to the SPOKES literacy programme would experience significant enhancement of their reading achievement, but not behaviour; and
- children of parents allocated to the combined programmes would experience improvements in both their literacy and behaviour.

And we expected to find changes in *parents* as follows:

- parents allocated to either of the two conditions involving the Incredible Years relationship programme (IY or COMBI) would demonstrate an improved balance in the increased use of positive parenting techniques and decreased use of negative parenting strategies; and
- parents allocated to either of the two conditions involving the SPOKES literacy programme (LIT or COMBI) would demonstrate increased use of specific strategies for reading with their children.

## Results

The results on each outcome measure, in each of the intervention groups, were compared with those for the control group to assess whether there were improvements over and above those that happened in the absence of the programme.

The main findings regarding changes in *parenting practices* were:

- In comparison with the control group, parents who were allocated to the IY relationship and behaviour intervention demonstrated an improvement in the ratio of positive to

negative parenting behaviour at 9-11 months; these findings were as expected. This improvement in the balance of parenting behaviours was sustained at the two year follow up. Again as expected, parents who were allocated the LIT did not show an improvement in the ratio of positive to negative parenting behaviour at 9-11 months; however, against predictions, they did show improvement at two year follow up. Finally, parents who were allocated to the COMBI interventions showed a trend towards an improved parenting ratio that did not quite reach statistical significance at either time point, but which came close.

- Those parents who were allocated interventions with a literacy component, the SPOKES programme or COMBI programme, both significantly increased their use of reading strategies at 9-11 months, compared with the control group; these findings were as expected. At the two year follow-up, the SPOKES literacy group sustained these improvements, but this was not the case for the COMBI group.

The main findings regarding changes in *child outcomes* were:

- Regarding disruptive behaviour, all three intervention groups – IY, LIT and COMBI – showed significant reductions compared to the control group at 9-11 months. Moreover, these effects were sustained at the two year follow-up for all three groups. The size of change in terms of effect size (a universal measure of change that can be applied to any measure; 0.2 =small, 0.5 = medium, 0.8 =large), were medium to large. Put another way, the IY children started in the worst 5% of children – at major risk for poor outcomes – but ended up in the worst 18%, at much lower risk; the control children hardly changed at all. Whilst the behaviour improvements were predicted in the IY and COMBI groups, the changes in the LIT group were unexpected.
- Regarding word-reading, the IY intervention group showed significant improvement compared to the control group at 9-11 months, but children of parents allocated the SPOKES literacy intervention, either alone (LIT) or in combination (COMBI) did not. The same pattern was seen at two years follow-up, with only the IY group showing improvement. This is a substantial gain in the IY group, equivalent to an improvement over controls of eight months in reading age at follow up. These results were the opposite of what was expected.

Importantly, the child behaviour and reading changes occurred equally strongly in families who had less parental education, were headed by single parents, unemployed parents or by depressed parents. The intervention may help narrow the longer-term attainment gap between children raised in families with these risk factors and those who are more fortunate, so reducing social inequality.

## **Discussion**

The trial confirmed that community-wide screening for behavioural issues in children can lead to a substantial proportion of parents taking up intervention programmes despite the time investment required and the fact that they were not usually seeking help at the outset. When delivered with fidelity for families with children who are already exhibiting disruptive behaviour, this trial has shown that early intervention using a high-quality evidence-based parenting

programme can lead to enduring improvements in the parent-child relationship, child behaviour, and also child reading skill – a novel finding. In contrast, the programme designed to improve child reading did not appear to do so, at least among this group of behaviourally challenged children – clearly a disappointing finding. The literacy programme has yet to be tested in a sample selected for literacy difficulties alone, but a trial funded by the Educational Endowment Fund is currently testing this.

It is not clear why IY on its own made for the most effective literacy programme, but a possible mechanism might be that gaining better control over a child who could be difficult, and building a better relationship with them, leads to the child complying better with reading tasks at school and at home. This may be more effective than focussing primarily on specific reading techniques at home, as happened in the literacy-only intervention, and in the second part of the combined intervention, where the behaviour element may have become less salient over time for parents.

## **Conclusion**

High quality parenting programmes designed to improve relationships and behaviour have enduring effects on child behaviour and reading. Wider dissemination could help more children achieve their potential in the longer term and reduce their chances of social exclusion.

## **1. Introduction**

This report describes the follow-up of the Helping Children Achieve (HCA) study. The aim of the study was to assess the longer-term effectiveness of three different parenting programmes to reduce anti-social behaviour and improve reading in primary school children aged 5-7. The original trial took place between February 2008 and March 2012, and the follow-up between September 2012 and January 2014. It was undertaken as part of the work of the National Academy for Parenting Practitioners, a large nationwide initiative to increase understanding of how best to improve parenting, and to provide training in effective methods

The findings from this trial can help inform which type of early intervention parenting programmes should be deployed to improve children's adjustment and life chances by reducing their levels of anti-social behaviour and improving their literacy.

### **1.1 Background**

Persistent anti-social behaviour in children (such as tantrums, defiance, lying, stealing and destructiveness) and poor reading ability are both factors that can lead to children having poor life outcomes including elevated rates of criminality, drug misuse, violence, school failure, unemployment, depression and psychosis.

To avoid these sad outcomes both anti-social behaviour and poor reading in children need to be improved, where possible, so that children can get back on track and have the opportunity to grow up to lead happy and productive lives.

The children whose families were recruited into this study were at risk of these poor outcomes because they were displaying above average levels of disruptive, oppositional and defiant behaviours.

## **1.2 Why does it matter?**

Persistent antisocial behaviour in children is common: at the more extreme level, oppositional-defiant and conduct disorders (ODD/CD) affect 5% of the population (Fergusson, Horwood & Ridder, 2005). These children are seriously impaired: at home, they are commonly criticised and have few friends, and at school they are disruptive and typically leave with no qualifications (ibid).

These negative traits carry on into adulthood - criminality, drug and alcohol misuse, and unemployment are common and the effects are big. The odds for these children ending up with these adverse outcomes are approximately five times higher than for other children. Not only are there substantial personal costs to these individuals and their families but the public cost over the lifetime has been estimated to be £250,000 by age 25 years (Parsonage et al 2102), costing society ten times as much as other children (Scott, Knapp, Henderson & Maughan, 2001).

However, there is no sharp cut-off whereby the rest of children outside the worst affected 5% do reasonably well. Rather, there is a continuous gradient of poor outcomes. Thus even the top half of the child population in terms of antisocial behaviour live less well-adjusted lives in childhood and do notably more poorly as adults than the half with less antisocial behaviour (Fergusson, Horwood & Ridder, 2005). They also incur considerable extra public cost – estimated at £125,000 per individual by age 25 (Parsonage et al 2102). Therefore early intervention is warranted not only to prevent the worst cases doing poorly, but also to improve outcomes by intervening early with more mildly affected children.

These facts have been noted by European and American governments who have made tackling child antisocial behaviour a priority. For example, in Norway, Sweden and England there have been national initiatives rolling out evidence-based parenting programmes on a large scale (Scott, 2010). In the UK, the Allen review *Early Intervention: the Next Steps* (2011) recommended the wide scale implementation of evidence-based parenting programmes and led to the establishment of the Early Intervention Foundation in 2013. The US National Academies of Science (2009) report on the prevention of mental, emotional and behavioral (MEB) disorders stated that:

*“Research on the prevention of mental, emotional and behavioral disorders should focus on interventions that occur before the onset of disorder but should broaden the range of outcomes to include accomplishment of age-appropriate developmental tasks (e.g. school, social, and work outcomes).”*

## **1.3 The need for early intervention**

The need for innovative interventions early in the life-cycle has arisen because current treatments for established antisocial behaviour are unsatisfactory.



- Even in well developed countries, only a minority of cases meeting criteria for oppositional-defiant and conduct disorders (the worst 5% of antisocial children) receive specialised help. For example, in England this is around a quarter (Ford, Hamilton, Goodman & Meltzer, 2005).
- Many of the specialist treatments offered are not grounded in empirically-based theory, but rather on general beliefs about psychotherapeutic counselling or medication.
- Many children and families only receive treatment in later childhood or adolescence. At these later stages outcomes are often poorer (National Academies, 2009).
- Treatments shown to work in the university clinics where they have originated typically are less effective in independent replications in 'real-life' practice (Weisz, Doss & Hawley, 2006).
- Most child mental health services are for clinically referred cases: there are relatively few routinely delivered prevention programmes.

For these reasons there is a need to develop and test interventions that address such issues by offering a service early on in child development, starting with the whole population. This means that the interventions need to be primary or early interventions not later 'treatment' when the children are older and when the condition is more severe and entrenched.

For interventions to be as effective as possible, it is important that they draw upon modern scientific studies. These show that several different factors influence the poor outcomes associated with the emergence of antisocial behaviour. Amongst many risk factors that each contribute to poor outcomes, three major ones that are potentially remediable are:

1. Negative, inconsistent parenting with lack of positive involvement in the child's life (Loeber & Farrington, 2000)
2. Frequency and severity of antisocial behaviours (ibid)
3. Poor reading ability (Trzesniewski, Moffitt, Caspi, Taylor & Maughan, 2006)

#### **1.4 Design of the HCA Intervention**

In planning the HCA interventions, we wanted to address all three risk factors through the single portal of parental behaviour. Although improving parenting to address antisocial behaviour and attention problems is well established, its potential to improve child reading is little tested.

We know that poor reading ability is much more common in families from disadvantaged backgrounds. In England, the recent Field review (2010) on *Poverty and Life Chances* noted:

*'Children from poorer backgrounds perform worse cognitively and behaviourally than those from more affluent homes [whilst schools] do not effectively close that gap; children who arrive in the bottom range of ability tend to stay there.'* (p.5)

This raises the question what components lead to the socio-economic group (SEG) gap, and what can be done about it? The role of good parenting practices has been shown as very relevant, and in general, lower SEG is associated with less optimal parenting practices (Ghate & Hazel, 2002).

With regard to school attainment, several studies have found parental involvement was key. Sylva, Melhuish, Sammons, Siraj-Blatchford and Taggart (2010) found that the home learning environment was more powerful in predicting attainment scores at age 11 in English and mathematics than the parents' socio-economic group. They also found that parental support for their children's learning (for example, reading to children, teaching them about sounds and letters) was a powerful predictor of school-readiness even after taking into account factors such as parental education, poverty, and home language.

These studies suggest that general parental involvement and a stimulating home environment influence attainment at school. The contribution of parents reading with their children on child reading attainment is less clear.

Bus, van Ijzendoorn & Pellegrini (1995) found that whether parents read with their children or not accounted for only 8% of the variance in literacy development. By contrast, in a multivariate analysis of the factors that account for the disparities in attainment seen in four-year-olds in the US, Waldfogel and Washbrook (2008) noted that after controlling for demographic factors including income and maternal education, *parental relating style* emerged as the single largest domain explaining the poorer cognitive performance of low-income children relative to middle-income children, accounting for 33% of the gap in language (4.4 points of the 13 percentile point gap).

In particular, maternal sensitivity and responsiveness accounted for over half of the effect on its own. A second important aspect was *parental support for learning*. This includes parents' teaching behaviors in the home as well as their provision of learning materials and activities, such as books. Taken together, parenting style and home-learning environment accounted for between a third and a half of the gaps between poor and middle income children. Given the findings on the associations between parental involvement and child reading cited above, it might seem "common sense" that promoting general parental involvement in reading would lead to better educational outcomes. However, there is little evidence to support this. For example, Mattingly, Prislun, McKenzie, Rodriguez & Kayzar (2002) reviewed 41 studies that evaluated parental involvement programmes. They found 'little empirical support for the widespread claim that parental involvement programmes are an effective means of improving student achievement or changing parent, teacher and student behaviour'. The review by Phillips, Norris & Anderson (2008) reconfirmed this finding, and cited evidence that the usual way parents read to their children was unlikely to be very effective because typically they point to the pictures, whereas if parents were to also carefully direct their children's attention to words in print, this would be more likely to be effective.

In summary, whilst the longitudinal studies confirm a strong association between parental involvement and child reading attainment, both the general quality of the parent-child relationship (e.g. sensitive responding) *and* the specific way the parent supports intellectual development and literacy are important in promoting reading skills (see Scott, Sylva, Beckett, Kallitsoglou, Doolan & Ford, 2012, for more detail).

## 1.5 The HCA Trial

There are many parenting programmes that tackle antisocial behaviour in children (NICE, 2013) but there are very few that deal with poor reading ability. Longitudinal surveys suggest that the

two issues may need different aspects of parenting to tackle behaviour and reading ability. The more emotional qualities of the parent-child relationship such as calm discipline and warmth affect a child's behaviour, whereas parental involvement in supporting their child's literacy should affect their reading ability.

To address the two issues together, our team conducted an earlier trial that combined two interventions: a parenting programme addressing behaviour and relationships (Incredible Years, IY), followed by a new parenting programme addressing reading ability (Supporting Parents on Kids Education, SPOKES). This earlier trial found combining these two programmes improved both child behaviour and reading a year after the trial started (Scott, Sylva, Doolan, Price, Jacobs, Crook, and Landau, 2010).

Because of these encouraging results, a new randomised controlled trial was designed to try to disentangle which ingredient had been active in producing these results.

This new trial was the Helping Children Achieve Trial to see which elements of the two interventions were having the greatest effect on children's outcomes. The research design was a four-armed randomised control trial that set out to compare the effects of:

- *The Incredible Years* parenting programme ('**IY**'), which is designed to improve parenting, reduce child behavioural problems and improve child and parent relationships.
- *The Supporting Parents with Kids' Education in School* Literacy parenting programme ('**Lit**'), which is designed to improve parents' ability to support child reading development and improve child literacy.
- *Both Incredible Years and SPOKES programmes in combination* ('**Combi**').
- *A control group* provided with an on-demand information service plus services as usual ('**Signposting**') which provided information to parents about services that are appropriate for concerns they raise about their child.

To address child behaviour, we chose the younger School Age Incredible Years programme (Webster-Stratton, 1998). This had proven effective in an earlier controlled trial with clinically referred antisocial children and had improved parenting, child antisocial behaviour, and child attending ability/ADHD symptoms (Scott, Spender, Doolan, Jacobs & Aspland, 2001; Scott, Sylva, Doolan, Price, Jacobs, Crook & Landau, 2010).

To address reading, we wanted to produce a literacy programme for parents based on contemporary theory. We took the view that just encouraging parents to read with their children would not be effective enough. So, the programme we developed (SPOKES) includes techniques for parents based on recent empirical evidence to encourage their children with their reading. This programme has been used in a previous trial (Sylva, Scott, Totsika, Ereky-Stevens & Crook, 2008) and has been found to significantly improve children's reading scores. Since then, it has been updated for this trial with additional strengthening in several domains, especially phonics.

## **1.6 Aims of the study**

There were four aims:

- To test different parenting programmes for their longer-term effectiveness in improving three main risk factors that independently contribute to the emergence of social exclusion: parenting; antisocial behaviour and poor reading ability.
- To select children at risk of poor outcomes due to elevated levels of anti-social behaviour from a total population.
- To use two recruitment strategies: a whole population approach with screening of all followed by selection of those in need, and an indicated approach, whereby children within the study areas could also be referred due to parental or teacher concern, to reduce the chance that any children were missed.
- To intervene early in their school career, before antisocial behaviour becomes entrenched.

## **1.7 Hypotheses**

1. Children of parents allocated to the IY relationship programme will demonstrate an improvement in their behaviour, but not reading achievement, two years after the start of the study.
2. Children of parents allocated to the SPOKES literacy programme will experience a significant enhancement of their reading achievement, but not their behaviour, two years after the start of the study.
3. Children of parents allocated to both programmes combined will experience improvements in both their children's literacy and behaviour two years after the start of the study.
4. Parents allocated to the IY relationship programme and to both programmes will show increased use of positive parenting techniques and decreased use of negative parenting strategies.

## **2. Method**

### **2.1 Setting**

The HCA study has been conducted in two contrasting local authorities: an inner London authority and a unitary authority in the South West of England. The inner London authority was the most socio-economically deprived borough in England (Communities and Local Government, 2008). The London authority also had a very diverse ethnic population with 52% from ethnic minorities. In contrast, 96% of the population of the South West unitary authority was White British, and the city was ranked 84th out of 152 local authorities for deprivation in the 2001 census.

## 2.2 Design

The HCA trial included the following stages:

- *Screen*: Families with children at risk for antisocial behaviour were identified in the population.
- *Pre-intervention assessment*: Families who met the eligibility criteria and said they were interested in taking part in the study were assessed on a range of detailed measures. Then they were randomly assigned to the four intervention and control groups.
- *Post-intervention assessment*: Recruited families were assessed in detail again, 9-11 months after the first in-depth assessment.
- *Follow up assessment*: The families were assessed for a third time, 12 months after the second assessment. i.e. almost two years after enrolment.

Written consent was obtained from parents, and assent from children, after obtaining permission to conduct the project from the King's College London research ethics committee. The trial is registered as a clinical trial (Clinical trials registration: ISRCTN53662728) and this report conforms to the guidelines of the Consolidated Standards of Reporting Trials (CONSORT; Moher, Schulz & Altman, for the CONSORT Group, 2001).

## 2.3 Identification and recruitment of families

Recruitment was conducted in two ways: first by a population based screen in schools and secondly by seeking referrals from interested parents and teachers. In order to identify children at risk for antisocial behaviour, 3675 children in Reception, Year 1 and Year 2 attending 11 primary schools in London and 56 primary schools in the South West were screened for antisocial behaviour by inviting their parents and teachers to complete a short set of questions about the child's behaviour. In addition to the number of children screened, 203 were referred to the study by their parents or following discussions with teachers or Parent Support Advisers. These parents completed the same questionnaires as part of the referral process. In total, 2665 questionnaires were received from parents (72% of those targeted) and 3198 (84%) from teachers. Children who did not have a parent questionnaire completed for various reasons but had only a teacher questionnaire (n=1010) were excluded from further study, because our primary outcome measure focuses on home-based antisocial behaviour, which teachers' reports may not reflect. The final number of children that recruitment to the study was based on was 2665 (screen n=2476; referral n=189) (see Figure 2.1, Participant Flow Chart).

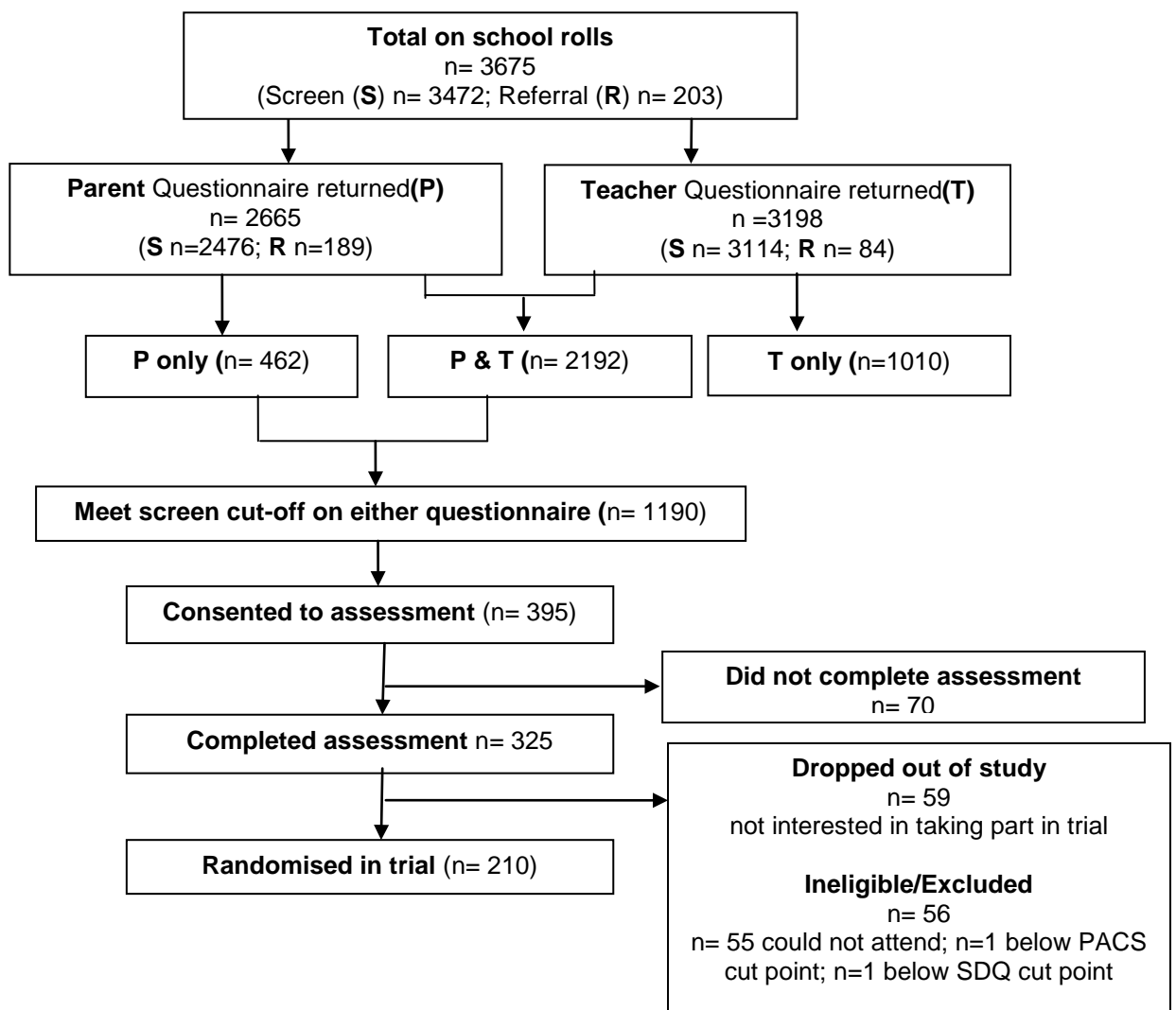
For further details of the recruitment process and challenges to recruitment see Stateva, Minton, Beckett, Doolan, Ford, Kallitsoglou, Scott & the HCA team (2013) and Beckett, Kallitsoglou, Doolan, Ford, Sylva, Scott & the HCA study teams (2010).

### Stage 1: Screen

Parents and teachers filled out a questionnaire that included the five items of the conduct problems (CP) scale of the SDQ (Goodman, 2001) and the eight diagnostic symptom criteria for Oppositional Defiant Disorder (ODD) listed in the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 1994). These were scored on a scale of 0-2 from no problem to a frequent problem.

We used a cut-off on the SDQ CP scale (mean score  $\geq 3$ ) or DSM ODD criteria (mean score  $\geq 5$ ) on either parent or teacher questionnaire to identify children at risk of difficulties due to antisocial behaviour. This cut-off is equal to one standard deviation above the national population mean on either questionnaire and corresponds to a level of conduct problems reached by the highest 15%. In this study, 1190 children (45% of the population) were identified as meeting the cut-off (see Figure 1, Participant Flow Chart). This percentage is considerably larger than the 15% identified by each questionnaire for two reasons: 1) parents and teachers identify different children as exhibiting antisocial behaviour; 2) the SDQ and DSM questions are different, and so somewhat different children are identified (see Table 2.1).

**Figure 2.1: Participant Flow Chart**



**Table 2.1 Percentage of the population that met the screen selection criteria according to questionnaire and informant**

<b>Parent report</b>	<b>DSM ODD criteria <math>\geq 5</math></b>	<b>DSM ODD criteria <math>&lt; 5</math></b>
SDQ CP scale $\geq 3$	22%	5%
SDQ CP scale $< 3$	12%	61%
<b>Teacher report</b>	<b>DSM ODD criteria <math>\geq 5</math></b>	<b>DSM ODD criteria <math>&lt; 5</math></b>
SDQ CP scale $\geq 3$	10%	3%
SDQ CP scale $< 3$	4%	83%
<b>Combined teacher or parent report on either questionnaire</b>	<b>Met cut-off on parent report</b>	<b>Did not meet cut-off parent report</b>
Met cut off on teacher report	10%	6%
Did not meet cut off on teacher report	28%	56%

### *Stage 2: Eligibility Criteria*

Eligibility criteria were as follows: 1) child scores above the cut-off (either parent or teacher on either questionnaire); 2) parent and child had to have working fluency in English; 3) parent had to be interested in attending the intervention groups and taking part in the study; 4) child had to be free of global developmental delay according to teacher questionnaire; 5) there should be no safeguarding concerns about the child. Then 6) the problems of those children who and met the above eligibility criteria were checked against the PACS Antisocial Behaviour (AB) detailed semi-structured interview; they needed to have a mean score of  $\geq .7$ , which is the mean for the population (Taylor, et al., 1991).

## **2.4 Randomisation and blinding**

Participants recruited were randomised to one of the four interventions by an independent statistician who was not given any identifying characteristics of the participants. The researchers were blind to the allocation group.

## **2.5 Measures**

The measures collected in the study were collected over the four stages and consisted of a mixture of questionnaires, interviews, assessments and observations carried out in the child's home or in the schools. The staff were extensively trained in the administration of the measures in the trial by experts from the Institute of Psychiatry and the University of Oxford.

### 2.5.1 Measures used in the screen

*Strengths and difficulties questionnaire (SDQ) conduct problem scale* (SDQ; Goodman, 2001). Conduct problems: disobedience, lying, fighting, stealing and temper were scored on a scale of 0-2 from no problem to a frequent problem.

Pro-social, and peer relation subscales were also completed by parents and teachers for screening purposes.

*DSM IV Oppositional Defiant Scale.* Questions related to the diagnostic criteria for Oppositional Defiant Disorder according to DSM IV (American Psychiatric Association, 1994). The eight questions include anger, losing temper, arguing, deliberately annoying others, refusing to comply, spiteful and vindictive behaviour, blaming others and being argumentative and are scored on a 0-2 scale, from no problem to a frequent problem.

### 2.5.2 Detailed measures: Socio-demographic data

Measures of the families' socio-demographic characteristics were collected using a semi-structured interview used in a previous trial conducted by this team (Scott, Sylva et al., 2010) which included details of the family structure, occupation (used to assess the socioeconomic status) and whether the child receives free school meals.

*SocioEconomic Status.* Details of parents' employment were assessed using the National Statistics Socio-Economic Classification (analytic class) (Office for National Statistics, 2005). The resulting data was categorised into four groups as there was an uneven distribution amongst the sample with a higher proportion of SES VIII. The four final groups were I- II: managerial or professional; III-V: intermediate, small employers, supervisory; V-VII: lower routine, technical and routine posts; VIII: never worked or unemployed.

*Parental education.* This data was collected at interview and covered the mother's educational qualifications, categorised into two groups where 1 = "educated to 16yrs, 2 = "educated to 18+/secretarial/technical qualification or = "educated to degree level or professional level.

*Ethnicity.* Parents were also asked for details of their ethnicity based on the ONS categories (Office for National Statistics, 2002). The original 16 point distribution was reduced to a two point scale of White British or ethnic minority due to the large number of individual ethnic groups.

*Single parent* Parents were asked whether they had and/or living with a partner or not. This variable was also a binary variable (yes/no).

### 2.5.3 Detailed measures: Measures of Parenting

*Alabama Parenting Questionnaire* (Shelton, Frick & Wootton, 1996) is a self-report of parenting practices, measuring parental involvement, positive parenting, monitoring and supervision, consistency of discipline, corporal punishment and other discipline practices completed by parents at the pre and post assessment stages as well as at the mediator stage (12 weeks after the start of the intervention). The scale was summed into two sub-scales, reflecting positive and negative parenting behaviour.

*The Interview of Parenting Practices* (Scott et al, 2010) is a semi-structured interview used to provide parental reports of their own parenting. This interview is based on the earlier work of Quinton & Rutter. Topics covered include:

- Praise: frequency of labelled comments praising the child for their actions
- Aversive Discipline: frequency of tap or smack, and days cross with the child

For each topic area, the parent would be asked to give detailed examples from the previous week and 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).

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.

*Reading strategies interview* (Sylva et al., 2008). The Reading strategies interview (Sylva et al., 2008) is a measure that provides an indication of the time the parent spends with the child reading and the strategies they use to create the right environment and to help the child with any difficulties. The overall time was worked out from the number of times a week the parent read with the child multiplied by the minutes spent. The different strategies for enabling a positive atmosphere and appropriate support for reading were summed from the five questions each scored 0-2.

#### 2.5.4 Detailed measures: Primary Outcome measures

The two primary outcomes measures in this trial were: the child's level of anti-social behaviour as measured on the Parental Account of Child Symptoms (PACS) and the child's reading ability measured on the British Ability Scales.

*The Parental Account of Child Symptoms interview* (PACS; Taylor, Sandberg, Thorley & Giles, 1991) is a semi-structured interview which is researcher rated. The measure was used to assess the severity and frequency of the child's disruptive behaviour through assessing detailed accounts of several common situations. The PACS is a well validated measure and predicts later poor outcomes. The questions include stealing, lying, tantrums, refusal to go to bed, rudeness, destructiveness and aggression, features of antisocial behaviour in children of this age. Such behaviours in childhood predict the development of more serious antisocial behaviours in a substantial proportion of adolescents.

The eight items are each rated for severity (0-3) and frequency (0-3) on a four point scale. The mean score of all eight items is computed to yield the total Antisocial Behaviour (AB) score. A mean score of  $\geq 7$  was used as a final cut-off point for entry in to the study; this score is equal to the mean level of conduct problems reported in an inner-city school population on the basis of the PACS AB scale.

*BAS Word Reading from the British Ability Scales* (BAS; Elliot, Smith & McCulloch, 1996) is an individually administered standardised test of the child's ability to read single words.

#### 2.5.5 Secondary Measures of child outcome

*Visual Analogue Scale* (Aitken, 1969) provides the opportunity for parents to report the nature and intensity of their child's difficulties that is concerning them most on a 10 cm scale and for this to be compared at later time points for the same problem.

*The Eyberg Child Behaviour Inventory* (Boggs, Eyberg & Reynolds, 1990) consists of 36 items designed to assess parent-reported conduct problems, and measures the frequency with which problems occur (Intensity Score) as well as the number of problems. This questionnaire has

very well established validity. This measure was collected at the pre and post assessment stage of the trial.

*The Reading Comprehension test of the Wechsler Individual Achievement Test (WIAT; Wechsler, 2002)* is an individually administered standardised test of the child's ability to understand a passage and answer questions based on it.

## **2.6 Procedures**

For all three intensive programmes, parents were invited to attend a group (parents of fifteen children as a maximum) run by two group leaders for two hours per week. All of the parent programmes adopted an active outreach approach, in order to try to engage families who may be hard to reach because they are burdened with mental health, relationship or socioeconomic difficulties. Group leaders made contact with parents prior to groups starting, through phone calls and/or home visits. The programmes were delivered in community facilities, close to local schools or in the schools themselves. Crèche facilities and transport were provided, if needed. Close contact was maintained with parents to help them work on strategies through midweek phone calls. Group leaders texted or phoned parents on group mornings if they needed extra support. If parents failed to attend or were experiencing difficulties, home visits were made to problem solve or practise specific strategies.

## **2.7 Interventions**

The interventions offered were: a) a well-established parent-child relationship programme that targets behaviour; b) a literacy-based intervention programme that helps parents support their child's reading; c) a combination of both these two programmes; d) a signposting service that provided parents with information about where to get help (control group). Participating families were randomly assigned to one of these four programmes.

### 2.7.1 Parent-child relationship Programme

The Incredible Years Parent Group programme (Webster-Stratton, 1989; Webster-Stratton, Reid & Hammond, 2001) aims to help parents build better relationships with their children and develop skills to manage difficult child behaviour effectively, using social learning, and cognitive, behavioural and systemic principles. It has a strong evidence base for improving child outcomes and parenting, and has been shown to create strong, positive relationships with families, paying particular attention to parents' emotional needs.

The programme is respectful of parents' own culture and beliefs, and adopts a collaborative rather than instructive approach. It has been shown to be popular with parents from diverse cultures and to have low drop-out rates in real-life conditions (Scott, Sylva et al., 2010). DVD vignettes are shown to parents in small groups; scenes depict parents sometimes behaving in a way that leads to the child being calm and obedient and at other times in a way that leads the child to misbehave and have tantrums.

The first six weeks concentrate on how to build positive relationships and promote desirable child behaviour and constructive activity through play, praise and rewards. The play element focuses on sensitive response to the child and parental approval of child on-task behaviour. The second six weeks focus on handling misbehaviour, including ignoring minor misbehaviour,

establishing positive routines, applying consequences, and using 'time-out'. Through detailed group discussion, parental behaviour that leads to better child behaviour is drawn out. Parents practise the new techniques in role-play of their own situations. They are set tasks, encouraged to practise the new skills at home and they are telephoned mid-week to encourage progress and resolve any difficulties they may have. The intervention lasts 12 weeks and each session is two hours.

All group leaders were trained in the IY basic programme by an accredited IY mentor or trainer. Parent group sessions were filmed so that practitioners could examine their group leadership skills. Group leaders received weekly supervision, in groups, offered by an accredited IY mentor or trainer. In addition, group leaders were offered some individual coaching in the programme.

In supervision, group leaders practised delivery of programme elements, for example rehearsing use of DVDs, standard parent role plays and introducing programme topics. In addition, they routinely brought DVDs of parent group for review, where challenges were identified and solutions were discussed and rehearsed through role play.

Group leaders used standardised programme materials, including manuals giving protocols for each group session, DVDs of vignettes shown to parents and standard hand-outs. All parents were given a copy of the *Incredible Years* book or audio book, in addition to hand-outs. After each session, group leaders completed self-monitoring checklists to assist them in reviewing their own practice. They also used these checklists to help identify areas for review in supervision.

### 2.7.2 Literacy-Based Parenting Programme

The SPOKES literacy programme is a manualised programme originally devised by Professor Kathy Sylva, Ms Carolyn Crook, Dr Jenny Price and Professor Stephen Scott (Sylva & Crook, 2000). It combines the Pause Prompt Praise (PPP; McNaughton, Glynn & Robinson, 1987) approach to reading with a 'whole language' approach focusing on meaning (e.g. 'talking around the book' and language 'play' with words). In PPP, parents are trained to provide one-to-one reading support to their school-age children and its effectiveness has been replicated in many countries (Merrett, 1998). PPP gives parents techniques to encourage their children's use of an active problem-solving approach to reading. The programme has been updated by Professor Kathy Sylva and colleagues (Sylva, Price, Crook & Roberts, 2010; Sylva, Roberts, Price, Dolan, Beckett & Scott, 2011) to form a literacy programme based on recent empirical evidence, including systematic phonics work. It lasts for ten, two-hour sessions, including a home visit and a family literacy workshop. Parents who were not enrolled in the combined IY/SPOKES programme were given an additional initial two sessions on how to help their child to concentrate and not be oppositional during shared reading. This programme was implemented in combination with the Incredible Years programme in a previous trial and was found to significantly improve children's reading scores (Sylva et al., 2008).

For the SPOKES Literacy Programme, supervision was offered by the programme developer, Professor Kathy Sylva, who is a reading support specialist, to ensure quality and fidelity.

### 2.7.3 Combined Programme

Families allocated to the combined programme were offered the Incredible Years programme followed by the SPOKES literacy programme; the total number of sessions offered was 22.

#### 2.7.4 Signposting and Information service

The comparison group participated in a Signposting and Information service. Parents were provided with a telephone helpline, which identified appropriate services for their concerns about their child and informed them about how to access these services. Evidence supports the efficacy of these less intensive, information based interventions (e.g., Sanders, Markie-Dadds, Tully & Bor, 2000; Sanders, Montgomery & Brechman-Toussaint, 2000; Sutton, 1992).

#### 2.7.5 Promoting parental engagement

For all three intensive programmes, parents were invited to attend a group (parents of fifteen children as a maximum) run by two group leaders for two hours per week. All of the parent programmes adopt an active outreach approach, in order to try to engage families who may be hard to reach because they are burdened with mental health, relationship or socioeconomic difficulties. Group leaders made contact with parents prior to groups starting, through phone calls and/or home visits. The programmes were delivered in community facilities, close to local schools or in the schools themselves. Crèche facilities and transport were provided, if needed. Close contact was maintained with parents to help them work on strategies through midweek phone calls. Group leaders texted or phoned parents on group mornings if they needed extra support. If parents failed to attend or were experiencing difficulties, home visits were made to problem solve or practise specific strategies.

#### 2.7.6 Programme fidelity

Practitioners who take part in any of the parent programmes in the study are trained to a high standard in the intensive programmes, over at least a two-term period. Fidelity to evidence-based models has been shown to be essential to achieve good outcomes for parents and children. The Incredible Years and SPOKES programmes included a range of elements to ensure fidelity.

### **2.8 Analytic strategy**

All results were analysed on the basis of an intention to treat strategy, in other words irrespective of which type of treatment they actually received.

Tests were made to assess the representativeness of those who did continue with the trial in comparison with the wider group recruited in order to establish whether there was any bias in terms of the socio-demographics or the behavioural difficulties of the group who elected to continue.

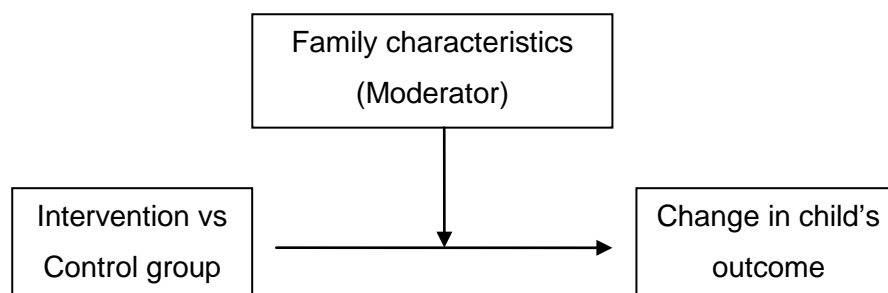
Analyses were all conducted in SPSS and involved the use of General linear Model repeated measures, covarying on a priori grounds because of findings in previous literature for single parenthood, child age and gender for behavioural outcomes, and adding parental education for reading outcomes. Tests compared the outcomes of each group to the control group, comparing pre-intervention to post-intervention and pre-intervention to follow-up.

The sample size calculation was based on 80% probability to detect an effect size of 0.5 SD (derived from the previous SPOKES trial, Scott et al 2010) between groups at a significance level of 0.05; this gave an n of 60 per group.

### *Moderators of intervention effect on children's outcomes at follow up*

We carried out moderator analysis to answer the fourth research question, which referred to whether the intervention effect on children's outcomes in the long term may be different for the families with certain characteristics at the start of the intervention. We followed Baron and Kenny's (1986) method to examine moderator effects. We used hierarchical multiple regression, conducting a separate regression for each potential moderator variable. In step 1, intervention status was entered, followed by potential moderator variable measured at follow up. In step 2 the interaction term (Potential Moderator x Intervention Status) was introduced. Potential moderators included: single parent, parent education (16 years or less vs more than 16 years), employment status (unemployed/never worked vs employed) and parental depression. Categorical moderators were binary variables (yes/no). The dependent variable was the change score in children's outcome. We carried out moderator analysis only for the statistically significant intervention effects on children's outcomes (behaviour and/or literacy). Centred predictor and moderator variables were created for this analysis. A significant interaction term suggests a moderator effect. A conceptual representation of the moderation model is presented in Figure 2.1.

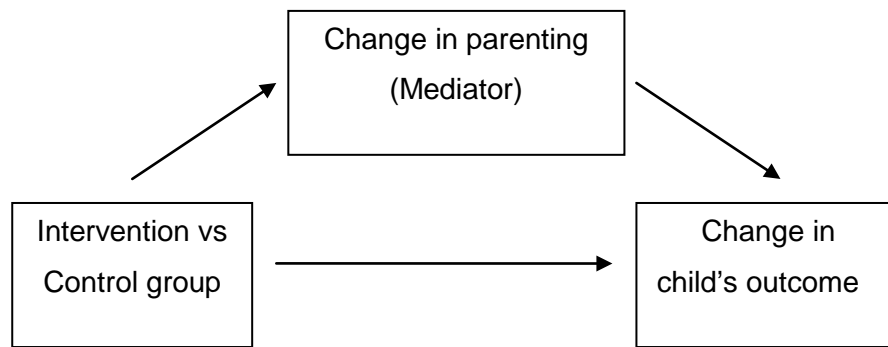
**Figure 2.1. Moderation model**



### *Mediators of intervention effect on children's outcomes at follow up*

The last research question concerned whether changes in children's outcomes in the long term were influenced by the mediating change in parenting practices. We used Baron and Kenny's (1986) steps as a guide to examine mediating models for three potential mediators measured at follow up: change in positive parenting, change in negative parenting and use of reading strategies. First we examined whether there were significant associations between the selected mediator variables, the dependent variable and the intervention status variable. Secondly, where all these were associated, we conducted hierarchical multiple regression analyses, with change in child's outcome as the dependent variable. In Step 1, intervention status was entered, and Step 2, change in parenting was introduced as a mediating variable. Where there was a significant reduction in the association between intervention and outcome, after introduction of the mediator, this suggests a mediation effect. A conceptual representation of the mediation model for intervention effect and child outcome is presented in Figure 2.2.

**Figure 2.2 Mediation model**



### **3. Recruitment and participation in the trial**

Out of the 1190 children identified as having antisocial behaviour on the screen questionnaires, the families of 395 (33%) expressed an interest in taking part and consented to be assessed. This is an acceptable response rate for a preventive intervention trial, where parents rarely start off seeking help and the assessment procedures are time-consuming. Reasons given for not taking part were: 20% not interested, 42% because they worked, and 38% because they had other commitments.

With these 395 families who consented to be assessed, researchers worked hard to engage parents with home visits to discuss and explain the study and the intervention programmes. Despite this, 70 (17%) did not complete the pre-assessment. Of the remaining 325 on whom assessments were completed, 59 then changed their minds about taking part in the trial and decided not to continue, 55 found they were unable to attend the intervention, and one did not have any antisocial behaviour once assessed by interview (PACS score <0.7). These changes by parents were often because of a change in circumstances, such as the child's behaviour improved, or a change in the family situation, for example a bereavement, family illness, or changes in working pattern that meant that they were no longer available. For more detail of reasons for non-engagement see Stateva et al., (2012).

The remaining 210 families were then randomised to one of four groups by an independent statistician and the researchers were blind to the randomisation.

#### **Profile of families who consented to be assessed**

Perhaps not surprisingly, the 395 children whose families consented to be assessed for the study had greater levels of difficulty, as rated by parents, than those who chose not to take part, on both the SDQ Conduct Problems and the DSM Oppositional Defiant Disorder scales: SDQ CP:  $t(1167) = 5.45, p < .001$ ; DSM ODD:  $t(1102) = 6.00, p < .001$ .

Of the 395 families who consented to take part there were differences according to the mode of recruitment with families who were referred or who referred themselves having a significantly higher level of difficulty in their behaviour than those who were recruited through the screen: SDQ, CP:  $t(366) = -4.90, p < .001$ ; DSM ODD:  $t(359) = -4.75, p < .001$ .

In both the London site and the South West site, the participants in the HCA trial had a higher proportion of social disadvantage on every index than the local population (Table 3.1). Study participants were more likely to receive free school meals, be in lone parent households, and be long term unemployed than the general population. The London site also had a higher proportion of families from ethnic minorities than the South West site. This data was taken from the 325 participants who completed the assessment.

Table 3.1 shows the socioeconomic status of the sample in the two authorities compared to the census information. In both sites there is a cross section of participants but also a high proportion of most disadvantaged.

**Table 3.1. Socio-demographic profile of the participants in the HCA trial**

<b>National Average</b>		<b>Census information for site</b>		<b>HCA consented cases</b>
<b>Free School Meals</b>	17%	London	33%	41%
		South West	16%	34%
<b>Single Parents</b>	25%	London	33%	42%
		South West	26%	31%
<b>Ethnic Minorities</b>	27%	London	52%	75%
		South West	3%	5%
<b>Special Educational Needs</b>	21%	London	Not available	27%
		South West	Not available	23%
<b>SES (long term un employed)</b>	16%	London	21%	34%
		South West	14%	26%

**Did the families who committed to the intervention programmes differ from the families who did not continue?**

Altogether the parents of 210 children committed to the intervention programmes and attended at least one session of the intervention. These families were considered to be ‘in trial’ and included in the analysis. There is remarkably little difference in the characteristics of those who committed to the intervention programmes and attended at least one session (n=210) and those who dropped out or became ineligible after they gave their consent (n=185) in terms of gender, ethnicity, special educational needs and levels of behavioural and reading difficulties of the child as perceived by parents and teachers (Table 3.2). This makes us confident that those who participated were to a large extent representative of the larger number who consented.

**Table 3.2 Comparison of those who committed to the intervention programmes or not**

	<b>In trial (n=210)</b>	<b>Did not continue (n=185)</b>	<b>Test x<sup>2</sup></b>
<b>Boys</b>	60%	55%	0.06, p=0.43
<b>Ethnic Minorities</b>	22%	23%	0.09, p=0.75
<b>Special Education Needs</b>	24%	24%	0.02, p=0.89
	<b>M (SD)</b>	<b>M (SD)</b>	<b>t</b>
<b>SDQ Conduct Problems parent report</b>	3.40 (1.77)	3.37 (1.83)	364=-0.15, p=0.88
<b>DSM ODD parent report</b>	6.94 (3.56)	7.46 (3.41)	358=-1.41, p=0.16

### Profile of families who took up the intervention

Of the 210 families that took part in the intervention 55 were allocated to the relationship programme (IY: Incredible Years); 51 to the literacy programme (LIT: Supporting Parents on Kids' Education in Schools Literacy Programme, Sylva et al., 2008); 50 to the combined literacy and relationship intervention (COMBI), and 54 to the control group (Signposting).

Table 3.3 presents the characteristics of the children and families by intervention allocation. No significant relationship was found between intervention group allocation and children's gender, age and special educational needs. The parents in the IY group were significantly less likely to leave school at age 16 or younger; such differences not infrequently happen despite rigorous randomisation processes. To stop this potentially biasing the results, parental education was added as a covariate in the statistical analyses. No other significant differences in family characteristics across the four groups of the study were detected by the statistical tests.

**Table 3.3. Child and family characteristics**

	<b>IY</b>	<b>LIT</b>	<b>COMBI</b>	<b>Sign</b>	<b>Test significance</b>
<b>Number</b>	55	51	50	54	
<b>Child</b>					
Boys (%)	64	51	58	48	p = 0.321
Age in months (SD)	72.70 (6.41)	73.34 (6.66)	70.46 (6.24)	73.69 (6.57)	p=0.056
Special Educational Needs	22	30	25	19	p=0.562
<b>Family</b>					
Single parent (%)	33	35	32	26	p=0.812
Left education at 16 yrs or earlier (%)	20	39	49	40	p=0.026
SES Never worked or unemployed (%)	24	37	32	20	p=0.177

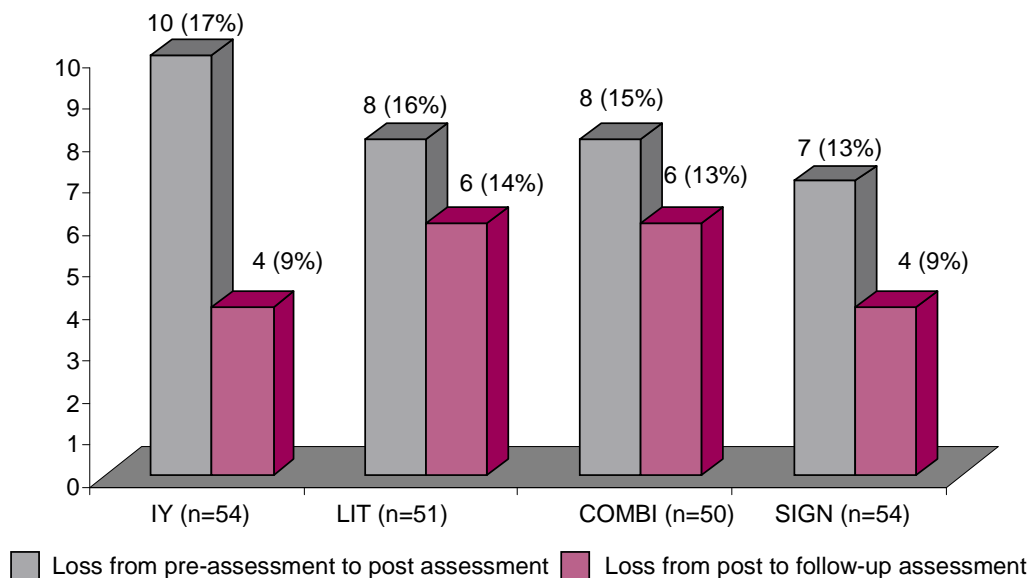


## Retention of families (n=210) in to the study from baseline to post and follow up assessment

The families who agreed to be assessed at baseline and attended the first session of the intervention tended to stay in the study and carry on to the follow up assessment. We managed to collect full or some data on 80% of the families at post assessment and 70% at follow up, which represents a very good rate of retention for a preventive type of study where families are sought out and offered support rather than seeking help themselves.

Post assessment retention across the four groups was similar, ranging from 13% -17% (Figure 3.1) and suggesting that the type of intervention allocated was not related to family drop-out from the study after initial assessment. This finding also suggests that the prospect of committing to a lengthy intervention programme like the COMBI – offered over two academic terms - did not reduce the chances of a family committing to the trial. Retention was especially high in the IY and Signposting groups. The LIT and COMBI group lost similar numbers of families at follow up as at post assessment. Altogether, the intervention groups lost between 22-30% of their families from pre to follow up assessment.

**Figure 3.1. Loss from pre assessment to post and follow-up assessment**



## Attendance at interventions

Mean participation in the interventions was high for a preventive trial: the IY families attended 8/12 sessions, LIT families 7/12 sessions and the COMBI families 15/22 sessions. Seventy five percent in the IY group, 72% in the LIT group and 76% of the families in the COMBI group attended at least half of the sessions. The number of sessions attended was evenly disturbed across the intervention groups with the majority of families attending more than 70% of the sessions (Table 5) ( $\chi^2(2, n=159) = 2.27, p=0.87$ ).

**Table 3.4. Proportion of families attending more than half the interventions**

No. of sessions	IY	LIT	COMBI
<1/2 (%)	13 (25)	14 (28)	12 (24)
>1/2 (%)	41 (75)	37 (72)	38 (76)
<b>Total</b>	<b>54</b>	<b>51</b>	<b>50</b>

**Were those who attended fewer than half of the sessions more likely to drop out of the research study?**

The data comparing the number of sessions attended with the drop-out rate from the study are presented in Table 3.5. They show a clear tendency for the families who attended fewer than half of the sessions on any of the intervention programmes to be more likely to discontinue from the research study ( $\chi^2(2, n=159) = 3.65, p=0.00$ ). It appears that those who engaged more fully with the intervention as shown by the number of sessions attended also engaged more fully with the study.

**Table 3.5. Parent drop-out rate from research study according to number of intervention sessions attended**

Drop out from research study	Proportion of interventions sessions attended		
	<1/2 (%)	>1/2 (%)	Total
Yes (%)	16 (43)	8 (7)	<b>24</b>
No (%)	22 (57)	109 (93)	<b>131</b>
<b>Total</b>	<b>38</b>	<b>117</b>	<b>155</b>

**Did the families who were assigned to the COMBI intervention attend the same amount of parent-child programme on (COMBI-IY) and literacy therapy (COMBI-LIT)?**

In order to find out whether the families who were allocated the COMBI intervention benefited from the relation therapy as much as they benefited from the literacy, we examined whether they attended a similar number of sessions from each programme. Of the 50 families allocated COMBI, 86% (n=43) attended half or more of the sessions of the COMBI-IY and 76% (n=38) half or more than half of the sessions of the COMBI-LIT. This finding shows that the families of the COMBI programme received similar exposure to each intervention approach.

#### **4. Changes in parenting practices in the different intervention groups**

##### **Changes in parenting practices**

We used both questionnaires and in-depth examiner-based interviews to assess the practices used by parents to relate to, and read with, their children.

### *Alabama parenting questionnaire*

Overall picture: For the child, the ratio of positive to negative parenting practices is most important: this overall measure gives a picture of their experience in the home. On this index, the improvement was highly statistically significant for the IY programme both at 9-11 months and two years ( $p=0.003, 0.001$ ). For the literacy programme it was not significant at 9-11 months, but was at two years ( $p= 0.22, 0.038$ ). For the Combination there was trend at 9-11 months and at two years ( $p=0.096, 0.067$ ) (no tables or figures).

Broken down by positive and negative parenting practices: There was not a clearly significant increase in the use of positive parenting practices by parents allocated to any group compared to controls both pre-post and at follow-up, although in all groups there were some trends towards improvement (Tables 4.5 and 4.6; Figure 4.1).

**Table 4.5. Pre to post assessment change in positive parenting practices (*Alabama parenting questionnaire*)**

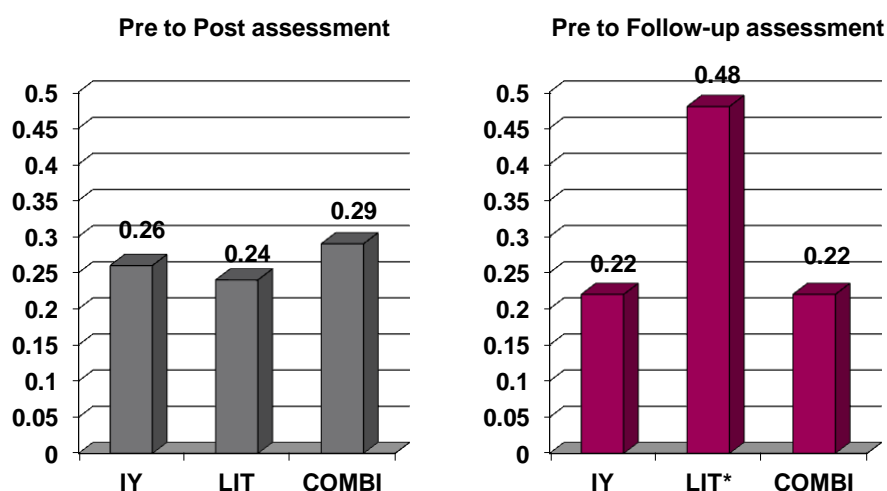
	Pre Score	Post Score	Raw score Change	Raw score Change vs Sign	Standardised Effect size of change score (d) vs Sign	Significance vs Sign
	M (SD)	M (SD)				
IY	25.2 (3.5)	26.4 (2.9)	1.16	0.76	0.26	$p=0.13$
LIT	25.9 (2.9)	27.0 (3.0)	1.10	0.70	0.24	$p= 0.15$
COMBI	26.4 (2.7)	27.6 (2.4)	1.24	0.84	0.29	$p=0.11$
Sign	26.5 (2.6)	26.9 (2.5)	0.40			

**Table 4.6. Pre to follow up assessment change in positive parenting practices (*Alabama parenting questionnaire*)**

	Pre Score	Follow Up Score	Raw score Change	Raw score Change vs Sign	Standardised Effect size of change score (d) vs Sign	Significance vs Sign
	M (SD)	M (SD)				
IY	25.1 (3.6)	25.5 (4.0)	0.43	0.65	0.22	$p=0.37$
LIT	25.4 (2.9)	26.5 (3.1)	1.16	1.38	0.48	$p= 0.06$
COMBI	26.66 (2.80)	27.08 (2.44)	0.42	0.64	0.22	$p=0.53$
Sign	26.39 (2.58)	26.17 (2.18)	- 0.22			

**Figure 4.1 Effect Size (*d*) of the change in positive parenting relative to the Signposting group**

(\*by intervention label denotes borderline statistically significant change)



In contrast, there a highly significant reduction in negative parenting reported by the IY group both pre-post and at follow-up, but not in the other two groups (Tables 4.7 and 4.8; Figure 4.2).

**Table 4.7. Pre to post assessment change in negative parenting practices (*Alabama parenting questionnaire*)**

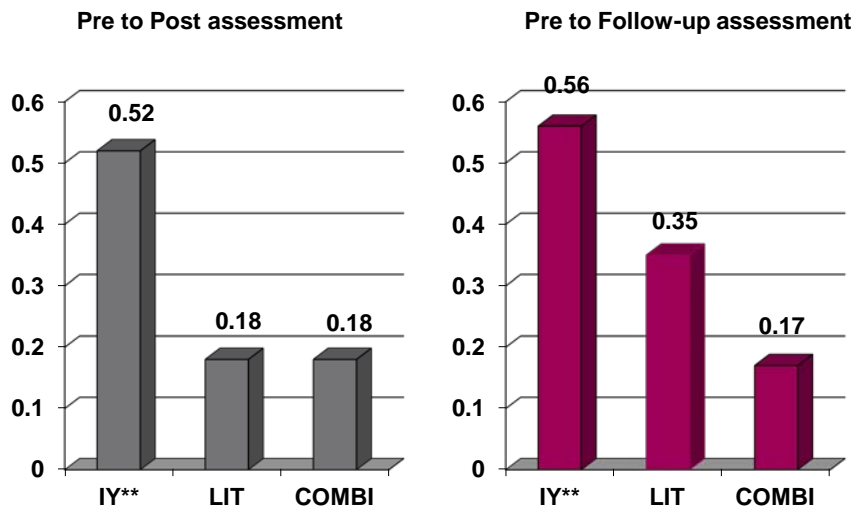
	Pre Score	Post Score	Raw score Change	Raw score Change vs Sign	Standardised Effect size of change score ( <i>d</i> ) vs Sign	Significance vs Sign
	<b>M (SD)</b>	<b>M (SD)</b>				
IY	18.4 (3.5)	15.3 (3.5)	3.08	2.01	0.52	p=0.009
LIT	17.0 (4.3)	15.2 (3.6)	1.77	0.70	0.18	p= 0.32
COMBI	17.1 (3.7)	15.3 (3.4)	1.76	0.69	0.18	p=0.33
Sign	16.6 (4.3)	15.5 (3.8)	1.07			

**Table 4.8. Pre to follow up change in negative parenting practices (*Alabama parenting questionnaire*)**

	Pre Score	Follow Up Score	Raw score Change	Raw score Change vs Sign	Standardised Effect size of change score ( <i>d</i> ) vs Sign	Significance vs Sign
	<b>M (SD)</b>	<b>M (SD)</b>				
IY	18.5 (3.4)	15.7 (4.2)	2.76	2.19	0.56	p=0.013
LIT	17.3 (4.4)	15.3 (3.8)	1.95	1.38	0.35	p= 0.12
COMBI	17.4 (3.6)	16.2 (4.5)	1.23	0.66	0.17	p=0.53
Sign	17.1 (4.30)	16.6 (3.70)	0.57			

**Figure 4.2 Effect Size (d) of the change in negative parenting relative to the Signposting group**

(\*\*by intervention label denotes highly statistically significant change)



*Examiner-based in-depth interview of parenting*

Parents allocated to the Combination of programmes used more praise at follow-up but not pre-post; changes in the other groups failed to reach significance (Tables 4.9 and 4.10). Regarding the use of aversive discipline, while no groups reduced their usage compared to controls in the shorter-term, at follow-up both the literacy group and the combination group had reduced the usage of this strategy significantly (Tables 4.11 and 4.12).

**Table 4.9. Pre to post assessment change in use of praise**

	Pre Score	Post Score	Raw score Change	Raw score Change vs Sign	Standardised Effect size of change score (d) vs Sign	Significance vs Sign
	<b>M (SD)</b>	<b>M (SD)</b>				
IY	2.12 (1.00)	2.45 (1.11)	0.33	0.23	0.19	p=0.15
LIT	2.33 (1.14)	2.18 (1.20)	-0.15	-0.25	-0.21	p= 0.17
COMBI	2.19 (1.14)	2.84 (1.17)	0.65	0.55	0.51	p=0.028*
Sign	2.22 (1.06)	2.34 (.86)	0.10			

\*p ≤ 0.05

**Table 4.10. Pre to follow up assessment change in use of praise**

	Pre Score	Follow Up Score	Raw score Change	Raw score Change vs Sign	Standardised Effect size of change score (d) vs Sign	Significance vs Sign
	<b>M (SD)</b>	<b>M (SD)</b>				
IY	2.12 (1.00)	2.03 (1.04)	-0.10	-0.08	-0.06	p=0.91
LIT	2.33 (1.14)	2.03 (1.00)	-0.20	-0.18	-0.15	p= 0.35
COMBI	2.19 (1.14)	2.18 (1.03)	-0.01	0.01	0.01	p=0.83
Sign	2.22 (1.06)	2.20 (.88)	-0.02			

**Table 4.11. Pre to post assessment change in use of aversive discipline**

	<b>Pre Score</b>	<b>Post Score</b>	<b>Raw score Change</b>	<b>Raw score Change vs Sign</b>	<b>Standardised Effect size of change score (d) vs Sign</b>	<b>Significance vs Sign</b>
	<b>M (SD)</b>	<b>M (SD)</b>				
IY	4.23 (2.65)	3.18 (2.81)	1.05	(-) 0.19	0.07	p=0.71
LIT	4.66 (2.81)	3.66 (2.70)	1.00	(-) 0.24	0.22	p= 0.72
COMBI	3.87 (2.64)	2.50 (1.97)	1.37	0.13	0.09	p=0.97
Sign	3.86 (2.67)	2.62 (2.27)	1.24			

**Table 4.12. Pre to follow up assessment change in use of aversive discipline**

	<b>Pre Score</b>	<b>Follow Up Score</b>	<b>Raw score Change</b>	<b>Raw score Change vs Sign</b>	<b>Standardised Effect size of change score (d) vs Sign</b>	<b>Significance vs Sign</b>
	<b>M (SD)</b>	<b>M (SD)</b>				
IY	4.46 (2.73)	2.80 (2.61)	1.66	1.09	0.38	p=0.14
LIT	5.03 (2.81)	2.28 (2.26)	2.75	2.18	0.77	p= 0.003**
COMBI	4.47 (2.90)	2.15 (1.80)	2.32	1.75	0.62	p=0.03*
Sign	3.73 (2.84)	3.16 (2.80)	0.57			

\*p ≤ 0.05; \*\*p ≤ 0.01

#### *Examiner-based in-depth interview of reading strategies*

Parents allocated to intervention groups that taught specific reading strategies, the literacy and combination groups, both increased their usage of these strategies compared to controls pre- to post, whereas the Incredible Years group did not. At Follow-up, the literacy group were still using these strategies more (Tables 4.13 and 4.14; Figure 4.3).

**Table 4.13. Pre to post assessment change in use of reading strategies**

	<b>Pre Score</b>	<b>Post Score</b>	<b>Raw score Change</b>	<b>Raw score Change vs Sign</b>	<b>Standardised Effect size of change score (d) vs Sign</b>	<b>Significance vs Sign</b>
	<b>M (SD)</b>	<b>M (SD)</b>				
IY	4.10 (1.91)	4.21 (2.00)	0.11	(-) 0.51	(-) 0.28	p=0.33
LIT	3.05 (1.61)	5.03 (1.84)	1.98	1.38	0.75	p=0.003**
COMBI	3.87 (1.56)	5.82 (1.68)	1.95	1.35	0.74	p=0.001**
Sign	3.48 (1.84)	4.10 (1.85)	0.62			

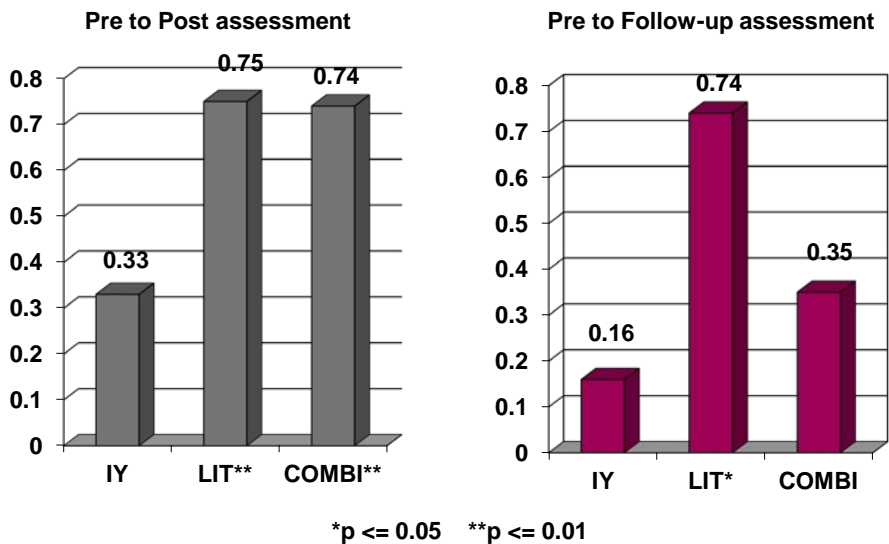
\*p ≤ 0.05; \*\*p ≤ 0.01

**Table 4.14. Pre to follow up assessment change in use of reading strategies**

	Pre Score	Follow Up Score	Raw score Change	Raw score Change vs Sign	Standardised Effect size of change score (d) vs Sign	Significance vs Sign
	<b>M (SD)</b>	<b>M (SD)</b>				
IY	4.08 (1.89)	4.47 (1.92)	0.39	0.29	0.16	p=0.57
LIT	3.19 (1.75)	4.63 (2.20)	1.44	1.34	0.74	p=0.025*
COMBI	3.74 (1.54)	4.47 (1.90)	0.73	0.63	0.35	p=0.21
Sign	3.60 (1.81)	3.70 (1.83)	0.10			

\*p ≤ 0.05

**Fig 4.3 Size (d) of the change in use of reading strategies relative to the Signposting group**



## 5. Changes in child outcomes in the different intervention groups

### Primary outcome: Change in child’s antisocial behaviour

We used the Antisocial Behaviour scale from the PACS examiner-based semi-structured interview to measure children’s antisocial behaviour at pre, post and follow-up assessment. As shown in Tables 5.1 and 5.2 and Figure 1, there was a significant treatment effect compared to the control group across all three groups after 9-11 months. The size of change in terms of effect size (a universal measure of change that can be applied to any measure; 0.2 =small, 0.5 = medium, 0.8 =large), were medium to large. Put another way, the IY children started in the worst 5% of children – at major risk for poor outcomes – but ended up in the worst 18%, at much lower risk; the control children hardly changed at all.

Strikingly, there was also a significant persisting treatment effect compared to the control group across all three intervention groups at 2 year follow up.

**Table 5.1 Pre to post assessment change in child's antisocial behaviour (PACS semi-structured interview with parents)**

	Pre Score	Post Score	Raw score Change	Raw score Change vs Sign	Standardised Effect size of change score (d) vs Sign	Significance vs Sign
	<b>M (SD)</b>	<b>M (SD)</b>				
IY	1.45 (.47)	1.17 (.47)	0.28	0.26	0.65	p=0.004**
LIT	1.48 (.39)	1.21 (.45)	0.27	0.25	0.62	p=0.015*
COMBI	1.46 (.41)	1.24 (.42)	0.22	0.20	0.50	p=0.024*
Sign	1.22 (.40)	1.20 (.45)	0.02			

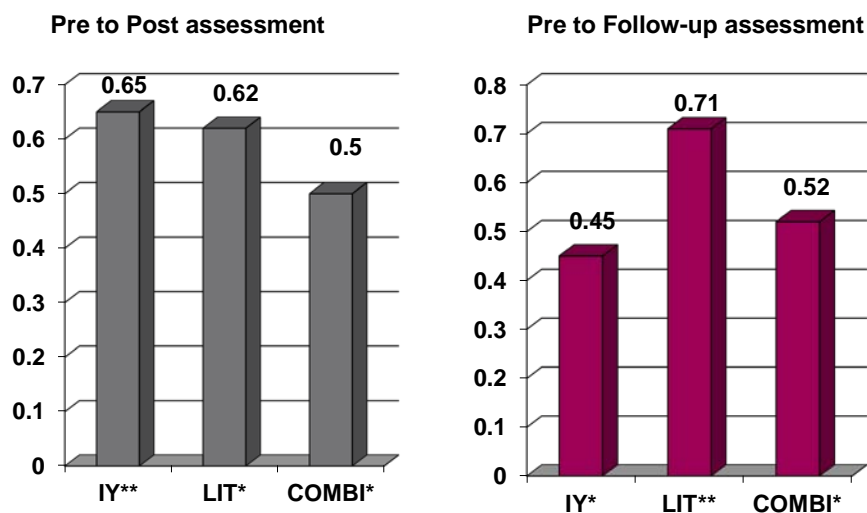
\*p<=.05 \*\*p<=.01 \*\*\*p<=.001

**Table 5.2 Pre to follow up assessment change in child's antisocial behaviour (PACS semi-structured interview with parents)**

	Pre Score	Follow Up Score	Raw score Change	Raw score Change vs Sign	Standardised Effect size of change score (d) vs Sign	Significance vs Sign
	<b>M (SD)</b>	<b>M (SD)</b>				
IY	1.47 (.43)	1.21 (.41)	0.26	0.19	0.45	p=0.029*
LIT	1.50 (.39)	1.13 (.40)	0.37	0.30	0.71	p=0.003**
COMBI	1.50 (.42)	1.21 (.36)	0.29	0.22	0.52	p=0.014*
Sign	1.25 (.42)	1.18 (.43)	0.07			

\*p<=.05 \*\*p<=.01 \*\*\*p<=.001

**Fig 5.1 Effect size (d) of the change in antisocial behaviour (PACS) relative to the Signposting group**



\*p <.05 \*\* p<.01



## Secondary outcomes: Change in child's antisocial behaviour

The Eyberg questionnaire showed comparable significant changes to the interview measure across all treatment groups pre- to post, that were maintained at follow-up in the Incredible Years group but not the other two treatment groups. The Visual Analogue Scale also showed significant changes pre- to post, that were not maintained in any group at follow-up (Tables 5.3 and 5.4).

**Table 5.3. Secondary behaviour outcomes pre and post intervention**

	Pre- Assessment	Post assessment	Change score	Change score vs. SP	Effect size	Sig
	Eyberg	Questionnaire				P
<b>IY</b>	143.40 (30)	119.01 (32)	24.39	18.62	.60	<b>.003**</b>
<b>Lit</b>	133.02 (30)	107.04 (35)	25.98	20.21	.65	<b>.006**</b>
<b>Combi</b>	139.28 (27)	112.78 (29)	26.5	20.73	.66	<b>.002**</b>
<b>Signposting</b>	124.98 (31)	119.21 (29)	5.77			
<b>VAS</b>						
<b>IY</b>	6.76 (2.05)	3.83 (2.53)	2.93	1.34	.65	<b>.034*</b>
<b>Lit</b>	6.80 (1.64)	3.59 (2.02)	3.21	1.62	.79	<b>.007**</b>
<b>Combi</b>	6.63 (1.81)	2.97 (2.11)	3.66	2.07	1.00	<b>.001***</b>
<b>Signposting</b>	6.81 (2.06)	5.22 (2.24)	1.59			

\*p<=.05 \*\*p<=.01 \*\*\*p<=.001

**Table 5.4 Secondary behaviour outcomes pre to follow-up**

	Pre- Assessment	FU assessment	Change score	Change score vs. SP	Effect size	Sig
	Eyberg	Questionnaire				P
<b>IY</b>	143.4 (30)	115.0 (35)	28.4	19.1	.68	<b>.027*</b>
<b>Lit</b>	133.0 (30)	119.8 (33)	13.2	3.9	.11	<b>.18</b>
<b>Combi</b>	139.2 (27)	119.2 (34)	20.0	10.7	.32	<b>.13</b>
<b>Signposting</b>	124.9 (31)	115.6 (28)	9.3			
<b>VAS</b>						
<b>IY</b>	6.76 (2.05)	4.25 (2.18)	2.51	.74	.30	<b>.52</b>
<b>Lit</b>	6.80 (1.64)	4.32 (2.3)	2.48	.71	.29	<b>.59</b>
<b>Combi</b>	6.63 (1.81)	3.76 (2.2)	2.87	1.00	.49	<b>.18</b>
<b>Signposting</b>	6.81 (2.06)	4.94 (2.2)	1.87			

\*p<=.05 \*\*p<=.01 \*\*\*p<=.001

## Primary Outcome: changes in child's word reading

We used the BASIII Word Reading test. The Incredible Years showed a significant change both Pre to Post and at follow-up compared to controls; this is equivalent to an improvement over

controls of eight months in reading age at follow up. Other groups did not change significantly compared to controls (Tables 5.5 and 5.6, Figure 2).

**Table 5.5. Pre to post assessment change in children’s word reading (*BAS raw score*)**

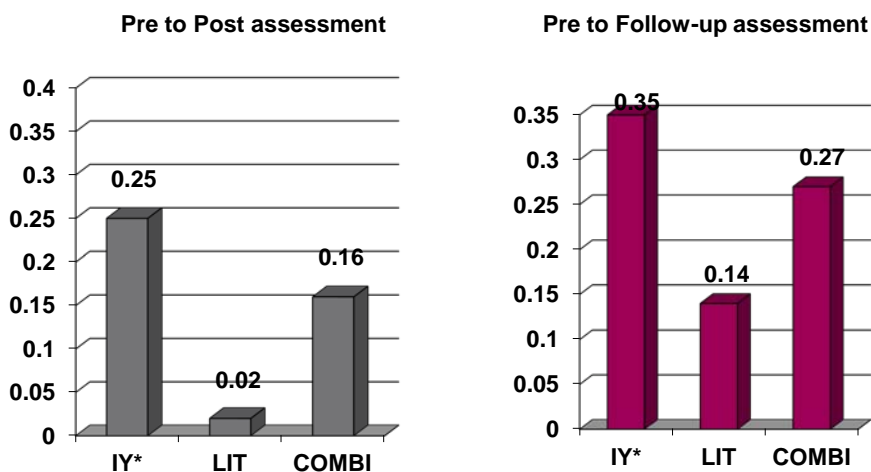
	Pre Score	Post Score	Raw score Change	Raw score Change vs Sign	Standardised Effect size of change score (d) vs Sign	Significance vs Sign
	M (SD)	M (SD)				
IY	23.7 (19.0)	40.8 (22.1)	17.1	4.4	.25	p=0.035*
LIT	18.9 (18.2)	31.9 (18.7)	13.0	0.33	0.02	p=0.63
COMBI	16.9 (16.1)	32.4 (20.4)	15.5	2.8	0.16	p=0.18
Sign	27.1 (20.1)	39.7 (22.6)	12.6			

**Table 5.6. Pre to follow up change in children’s word reading score (*BAS raw score*)**

	Pre Score	Follow Up Score	Raw score Change	Raw score Change vs Sign	Standardised Effect size of change score (d) vs Sign	Significance vs Sign
	M (SD)	M (SD)				
IY	26.1 (18.5)	49.5 (18.2)	23.4	6.3	0.35	p=0.049*
LIT	18.6 (17.1)	38.2 (16.4)	19.6	2.5	0.14	p= 0.15
COMBI	18.3 (16.7)	40.2 (19.7)	21.9	4.8	0.27	p=0.31
Sign	27.4 (20.8)	44.5 (17.9)	17.1			

Note: values at Pre differ slightly from table 5.5 due to different child numbers in Pre-Follow-up pairs

**Fig 5.2 Effect size (d) of the change in word reading (BAS III) relative to the Signposting group**



## Secondary Outcome: Changes in child's reading comprehension ability

We used the WIAT Reading Comprehension test to measure children's reading comprehension ability. No intervention group showed any significant changes compared to controls pre- to post, or at follow-up (Tables 5.7 and 5.8).

**Table 5.7. Pre to post assessment change in children's reading comprehension (WIAT reading comprehension, standardised score)**

	Pre Score	Post Score	Raw score Change	Raw score Change vs Sign	Standardised Effect size of change score (d) vs Sign	Significance vs Sign
	<b>M (SD)</b>	<b>M (SD)</b>				
IY	94.70 (18.44)	101.83 (18.03)	7.13	2.27	0.12	p=0.39
LIT	89.41 (15.55)	91.76 (16.57)	2.35	- 2.51	-0.13	p=0.39
COMBI	90.21 (14.90)	95.50 (17.26)	5.29	0.43	0.02	p=0.90
Sign	94.57 (19.46)	99.33 (18.44)	4.86			

**Table 5.8. Pre to follow up assessment change in reading comprehension (WIAT reading comprehension, standardised score)**

	Pre Score	Follow Up Score	Raw score Change	Raw score Change vs Sign	Standardised Effect size of change score (d) vs Sign	Significance vs Sign
	<b>M (SD)</b>	<b>M (SD)</b>				
IY	97.90 (15.87)	107.17 (14.47)	9.27	- 0.98	- 0.05	p=0.75
LIT	88.87 (15.47)	95.97 (16.39)	7.1	- 3.15	- 0.16	p=0.39
COMBI	90.97 (15.10)	98.56 (18.10)	7.59	- 2.66	- 0.13	p=0.47
Sign	95.17 (20.35)	105.42 (18.57)	10.25			

## 6. Moderators and mediators of change

### Moderators of change in children's antisocial behaviour at follow up

We found a considerable intervention effect on children's antisocial behaviour at follow up and we wanted to examine whether certain family characteristics may moderate this effect. For each intervention, compared to controls, there were no significant moderator effects for parental education, unemployment, single parenthood or parental depression. This finding suggests that children in families where the main caregiver has either spent fewer years in education, or is unemployed/has never worked, is single, or is exhibiting symptoms of depression are as likely to benefit from the interventions in the long term as the children in families who do not have the above characteristics.

## **Mediators of change in children's antisocial behaviour at follow up**

We wanted to examine whether the long term effect of the interventions on children's antisocial behaviour may have been mediated by the change in the way parents relate and read with their children as a result of receiving the intervention. We ran hierarchical multiple regression models for change in use of aversive discipline because it was correlated with improvement in antisocial behaviour and intervention status. We also ran a regression model for change in use of reading strategies because it was correlated with LIT group membership and improvement in antisocial behaviour, meeting preconditions for mediation analysis as laid out by Baron & Kenny (1986).

The findings showed that the long term intervention effect for the LIT group on antisocial behaviour stopped being significant when reduction in aversive discipline was introduced as a potential mediator in the model. Reading strategies did not mediate the impact of the LIT group on children's antisocial behaviour. There was a trend for aversive discipline to also have a mediation effect in the relationship between the COMBI intervention and change in antisocial behaviour as ( $p=0.06$ ) but it did not quite reach significance.

## **7. Discussion and conclusions**

### *Overview of study*

The Helping Children Achieve study was a large and ambitious project that aimed to investigate how best to improve vulnerable children's life chances over the longer term. It took children at the beginning of their school careers and used a total population approach to identify those at elevated risk of poor outcomes due to antisocial behaviour. It took place in two locations representative of different populations in contemporary Britain, an inner-city Metropolitan area with a high proportion of ethnic minorities, and a south-western town that was largely culturally homogeneous. The study aimed to disentangle whether parenting programmes that address behaviour and relationships might also improve literacy, and whether programs that address child literacy achieve this, and whether they also improve behaviour. The study also addressed whether combining both would maximise benefits for children. The interventions used were of high quality with well-trained and supervised staff. Funding from the Nuffield foundation enabled us to see whether initial effects seen over one year endured over two years.

### *Recruitment and retention*

The results suggest that school-based screening for targeted interventions to alleviate the risk of childhood antisocial behaviour is feasible and acceptable to parents and teachers.

Approximately a third of those who screened positive were interested in engaging in the interventions, despite the restrictions of participating in a trial. This is a fairly high proportion compared with many prevention trials; for example, the government-sponsored classes and advice network parenting trial (CAN Parent) that aimed to reach 40% of parents of children under five in fact reached only 3% (Department for Education, 2014). It should be remembered that in this study the parents were not actively seeking help, and the level of difficulty in the majority of children was not severe. Reasons given by those who did not take part were that they were working, that they had other commitments, or were not interested. Those who did

express an interest had children with higher levels of difficulties, so the trial was reaching those with a high level of need. Compared with the population at large, the families had increased indices of disadvantage, indexed by the proportion receiving free school meals, who were lone parents, who were in an ethnic minority or who were unemployed. Those who ended up taking part had similar characteristics to those who eventually did not, suggesting that the trial was representative of parents interested in taking part. The proportion of parents taking part might increase if families were offered the intervention as a service directly, without being part of a study that involved the risk of being randomised to not receiving a parenting programme.

Once they had attended the first session, three-quarters of the parents attended at least half of their allocated course. Such a high level of engagement suggests that the content of the courses were acceptable and useful to these parents, since the commitment of two hours per week, plus travel time was a large amount of time for many of the parents, who were very busy and had many other commitments. Interestingly, although the screening procedure picked up children with antisocial behaviour, attendance at the literacy program was just as good, suggesting that these parents were definitely interested in improving their children's attainments, even if it was not their primary concern.

### *Impact on parenting*

The impact of the programmes on parenting showed some interesting results. It was expected that parents who were allocated to the relationship and behaviour program (IY and Combi) would increase their balance in the use of positive versus negative practices. In fact this was true for the IY group, not only at 9-11 months but also two years after enrolment – a notably enduring impact. There was a similar trend for the combined programme group, but it did not quite meet statistical significance - perhaps the focus on reading strategies on the second leg of the programme drew attention away somewhat from relationship management. As expected, the literacy group showed no significant change in their practices at 9-11 months, but surprisingly, they did after two years. This change was driven by an increase in the use of positive strategies, which may have been because the first two sessions of that programme did address increasing positive behaviour, so that control would be gained over the child (recruited because of disruptive behaviour) to enable them to enjoy reading sessions.

The findings regarding use of reading strategies were as might have been expected: those exposed to the literacy program, either alone or as part of the combination did show changes, which were still present for the literacy group at follow-up, despite their children having learnt to read by then and having less need of these strategies. In contrast, the behaviour and relationship programme did not change reading strategies, as would be expected. Thus, in summary, the programmes with the literary element did change parental reading behaviour with their child, but all programmes changed the balance of positive to negative relating behaviour, at least at one time point.

### *Impact on child antisocial behaviour*

As hoped, the children of parents allocated to the relationship and behaviour program, whether on its own or in combination, showed substantial reductions in antisocial behaviour on the main interview outcome, both after intervention and at longer term follow up. Surprisingly, however,

this also applied to children of parents allocated to the literacy program. The effectiveness of the latter in improving behaviour may have been due to the fact that some strategies for controlling behaviour in a positive way were given in the first two sessions, and also because the strategies for reading were not dissimilar, for example, encouraging the parent to praise the child and listen carefully, and spend special time with them, albeit in reading. In all groups, the fact that the initial changes were maintained at longer term follow up is very encouraging and an important finding in terms of the hope to alter the long-term life chances of these children. The visual analogue scale allows parents to choose what they were concerned about when they entered the trial, so is an important complement to the standardised measures. In all interventions, their concerns were considerably improved after intervention. This was not the case at follow-up, nearly two years after the problems were defined. This is not surprising since the initial issues were likely to have changed - examples of what the parents were concerned about were fighting with siblings, not eating properly and refusing to go to bed. In other words, very specific problems that are less likely to persist over time anyway.

### *Impact on child reading*

Surprisingly, the relationship and behaviour programme on its own did show significant effects on word reading both after the intervention and at follow-up. Possibly the mechanism through which this improvement came about was through gaining better control over a child who could be difficult and having a warmer relationship with them, leading to the child complying with reading tasks at school and at home.

Disappointingly, the literacy programme either alone or in combination with the relationship programme did not significantly improve word reading by the children either after intervention or at follow-up. It suggests that once teachers have done their work at school, using specific reading techniques at home may not improve child reading, at least in disruptive children not initially selected as poor readers. Reading comprehension skills did not change in any intervention, but this was not targeted. It is possible that the programme might work for poor readers, who were not addressed in this trial. This is now being tested in a large intervention project led by Professor Sylva and being independently evaluated by the Educational Endowment Foundation.

### *Moderation and mediation of effects*

The strong and reliable effects on antisocial behaviour occurred equally powerfully for parents living under more disadvantaged conditions as indexed by having less education, being unemployed, being single, or being depressed. This is a very encouraging finding and suggests that the current programmes are appropriate for these groups, and also that there is just as much chance of improving the life chances of children living in these families. In the mediation tests of longer term outcome, there was some suggestion that reduction of aversive discipline was important in leading to reduced antisocial behaviour.

### *Strengths and weaknesses of the study*

The study was carried out in two different local authorities, both of which are representative in their profile for children growing up in disadvantaged circumstances. The inner London borough

included families living in marked levels of deprivation and contained a high level of people from black and ethnic minorities, while the city in the South West was predominantly white. The contrast between the two authorities is a strength of the study, as the effects of the interventions were similar in both areas, so the findings should generalise to local authorities with a population mix that lies between these two. The levels of disruptive behaviour and the level of take up in the trial were remarkably similar in both authorities. There were some differences between the four intervention groups at baseline, but the pattern suggested that these were random.

Approximately a third of those who were eligible for the trial were successfully recruited and over three quarters of those who engaged attended at least half of the sessions offered to them. However, two thirds of the parents who were invited to participate declined. Some parents were not able to attend at the time the interventions were running, and this proportion might be reduced in a situation where more courses could be run across a greater range of times. It is unlikely that we could ever reach a situation of 100% uptake of targeted interventions for parenting courses, but continued publicity that indicated the importance and effectiveness of such interventions, perhaps combined with incentives to encourage employers to allow staff time off to attend might also increase engagement (Sanders, Markie-Dadds, Tully, & Bor, 2000). Parents whose children develop antisocial behaviour often experience additional costs (Whitehead, Stockdale & Razzu, 2003). Similarly, parents whose child's behaviour is causing difficulty are also more likely to experience depression and anxiety and be less able to function, both of which might suggest that employers have an interest in supporting parents to access this kind of intervention.

The measures used in this trial were of good quality, and included detailed semi-structured interviews of proven validity, and standardised reading tests were carried out at school by researchers who were blind to which group the children were in. Using a randomised design is the gold standard for comparing treatments.

### *Future research*

Our results suggest that the behaviour and relationship parenting programme is effective in reducing anti-social behaviour and may also improve reading. As far as we know this is the first study to show this, so it would be worth replicating. The literacy programme has yet to be tested in a sample selected for literacy difficulties alone, but as noted above, this is under way. We also need to understand better how these programmes impact on children's developmental trajectories in the longer term; further follow up of this sample would be an ideal way to do this. Anecdotally, in clinic, parents often report that the IY intervention is hugely beneficial in the short term, but that as subsequent challenges and difficulties hit the family, new behavioural challenges emerge, the newly acquired skills falter and that some kind of "booster" would be useful. Future research should elucidate what form of "booster" parents would most value and test different methods of supporting continued improvement at different times after baseline to understand what works best, for whom and why.

The interventions in the current study were, with the exception of the signposting, all group-based, and it is likely that some people declined to participate because they anticipated that the group situation would be overwhelming. In addition, not everyone who participated

demonstrated improvement, despite the effect sizes attained at group level. Further research should focus on which parents can gain benefit from the group courses and which parents might do better with more intensive home-based interventions, in order to prevent wasting resources on parents who experience greater benefit from a different approach.

### *Conclusions*

In conclusion, the Helping Children Achieve trial provides robust evidence that a substantial proportion of parents with children at risk of poor outcomes due to antisocial behaviour are prepared to give up their time to take part in parenting programmes, even though they did not seek them out. All the programmes offered addressed specific skills, including making a more positive relationship, and this was reflected by the use of more positive parenting strategies after the interventions. Crucially, antisocial behaviour was reduced in the short and longer term, which is very encouraging for the life chances of these children. The relationship and behaviour programme also led to improvements in child ability to read single words, which is an encouraging result. The literacy program did not appear to have this effect, but is now being tested amongst poor readers. The combined programme did not seem to add any extra benefits. The results support rolling out the IY relationship and behaviour programme, especially for families living in socioeconomically disadvantaged circumstances, because in this and other samples these children are more likely to have higher levels of anti-social behaviour and poor reading skills, yet responded equally well to the intervention (Field, 2010).

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