

# Do nurture groups improve the social, emotional and behavioural functioning of at risk children?

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*Nurture groups are teacher-led interventions which seek to address the difficulties of children exhibiting a range of emotional and behavioural problems by establishing more adaptive relationships with adults and peers. This study investigates changes in social, emotional and behavioural functioning in children within a nurture group and comparison condition. Significant changes were found in nurture group children's Total Strength and Difficulties Questionnaire scores, and along with an increase in 'pro-social' behaviour, a decrease in 'peer difficulties' and 'hyperactivity' relative to the comparison group. Significant changes were found in most strands of the Boxall Profile whilst ratings of nurture group children's academic levels also improved significantly more than those of the comparison group. The discussion considers the implications of these results and the methodological constraints. It is concluded that nurture groups are a promising teacher-led intervention for social and emotional difficulties. The authors recommend a randomised controlled study to further explore the routes by which these groups effect change.*

## Background to educational (Tier 1) interventions

**P**RIMARY school children who present with social emotional and behavioural difficulties (SEBD) are at risk of incremental mental health and behavioural problems whilst often underachieving academically and disrupting classroom functioning. There is growing recognition that early intervention in children's mental health problems is optimally effective in ensuring health and well being in adult life (DfES, 2004). Government Policy (NICE Guidelines, 2007; The Children Act 2004; Every Child Matters, 2003) now requires schools to promote the emotional well-being of all pupils and also to address the specific needs of children exhibiting signs of emotional and behavioural disturbance.

Children's difficulties may be expressed in age inappropriate behaviour, oppositional behaviour impacting on individual and collective learning and difficulties forming positive relationships with others (DfES, 1994). The category of SEBD encompasses

those who may also be diagnosed with disorders such as attention deficit disorder with hyperactivity (ADHD). The impact of such childhood difficulties on later adult functioning has been widely documented, with early developmental psychopathology linked to high rates of later anti-social behaviour and mental health problems (Cassidy & Shaver, 1999; Meltzer, 2000).

In order to address the increasing prevalence of such difficulties, the UK Government has invested in both universal curriculum such as SEAL (Social and Emotional Aspects of Learning, DfES, 2005) and in school-based interventions for children identified as being 'at risk'. The SEAL curriculum provides a framework and materials for personal, social and health and emotional learning (PSHE) and for shaping the school ethos. Specific interventions include the Penn Resiliency (Cutuli et al., 2006) and FRIENDS Programmes (Shortt et al., 2001) which are group interventions for late primary and middle school students teaching cognitive-behavioural and social problem-solving skills.

More generally behavioural interventions are widely used (e.g. Broussard & Northrup, 1997; Salend & Gordon, 1987) which incorporate the teaching of social skills (Sawyer et al., 1997) and cognitive strategies such as self-instruction (Manning, 1988; Shepp & Jensen, 1983). Behavioural and Education Support Teams (BEST, e.g. Halsey, 2005) often include parent training components. Despite the multitude of interventions there are relatively few outcome studies and the evidence base is limited (Harden et al., 2003).

### **Nurture groups**

Nurture groups, which were developed three decades ago, have been revived in the past decade. In contrast to most other school-based strategies, nurture groups (Bennathan & Boxall, 2000) are informed by a psychotherapeutic model (Harden et al., 2003) and aim to address the underlying causes of SEBD. In addressing core relational and developmental features it is argued that behavioural difficulties and internalising symptoms will improve.

A recent survey (2008) found over 1000 nurture groups in the UK in both primary and secondary schools. 'Classic' nurture groups are usually run with between six and 10 children, aged 4 to 8 years. The groups take the form of small, home-like classrooms which are staffed and run by a full-time qualified teacher and classroom assistant. Centrally informed by attachment theory (Bowlby, 1969) their fundamental aim is to effect long-term change through recreating processes of adequate care. Children are referred to the groups with a range of problems including aggression, hyperactivity, low mood and lack of responsiveness, with problems usually emerging at a pre-nursery level. The groups seek to address particular features of SEBD such as: 'emotional turbulence' and 'difficulties in forming and maintaining positive relationships' (DfEE, 1994). Children usually receive a two-term intervention before gradual progression back to mainstream classrooms.

Bennathan and Boxall (2000) hypothesise that creating new child-teacher attachment systems within the nurture group environment will facilitate development in emotionally deprived children whose problems are linked to impoverished early years experiences and insecure attachments (Boxall, 2002). Central to children's lives are significant adults and at school the significant adults are teachers. It is hypothesised that children's attachment difficulties will be manifest within their school relationships so that within the school context, teachers can become attachment figures and potentially significant agents of change.

Alongside attachment theory, there is also a strong emphasis on social learning and modelling social skills. As well as ensuring that children adhere to expectations for respectful and considerate behaviour, the two adults are trained to model adaptive behaviour and to discuss and resolve their differences regarding small organisational matters, thus modelling skills used in everyday conflict resolution, which many children may not have witnessed at home.

### **Previous nurture group studies**

Research on the outcomes of nurture groups to date is promising. Iszatt and Wasileska (1997) retrospectively analysed the outcomes of 308 children placed in nurture groups. They found that 87 per cent of nurture group children were able, after less than one year, to return to mainstream teaching, with 83 per cent requiring no additional special needs support. A comparison with a small control group of children with similar problems suggested that this group showed higher levels of enduring difficulties, although no statistical analysis of the differences between groups was reported.

Cooper, Arnold and Boyd (2001) carried out a prospective study of 321 children. Findings indicated that after one year, emotional and behavioural functioning significantly improved in nurture group children, compared to controls. This was measured by the total score on the Strengths and Difficul-

ties Questionnaire (SDQ) (Goodman, 1997) and the Boxall Profile (Bennathan & Boxall, 1998). Colwell and O'Conner (2003) also found significant improvements in nurture group children's functioning, although no control group was tested. Findings by Cooper and Whitebread, (2007) suggested that the biggest improvements in SEBD indicators occurred in the first two terms of the intervention. Subsequently, behaviours which enabled children to engage in learning, were found to improve incrementally during the third and fourth terms. An evaluation of school nurture groups in Glasgow (Glasgow City Council, 2007) found that nurture group pupils in 16 schools improved significantly in relation to a comparison group in terms of behaviour, social and emotional functioning and academic attainment. Scott and Lee (2009) evaluated part-time nurture groups and found that these children made significant social and emotional improvements in comparison to a 'mainstream' group. It was also found that the younger the age at which a pupil attended the nurture group, the greater the gain. The studies outlined above have typically used the SDQ and Boxall Profile as outcome measures.

### **Rationale for current study**

These findings, aligned with increasing national investment in nurture groups, underscore the need for further replication studies. There is also a need for studies to look more closely at the specific features of SEBD which nurture groups address. Changes as measured by individual subscales on the SDQ and on the Boxall Profile have not been previously reported. The areas of difficulty associated with each sub-scale would be expected to improve following time in a nurture group. Due to the small supportive group environment which stresses interpersonal awareness and constructive behaviour, improvements in social skills are likely to be observed in the early stages, possibly prior to any improvements in underlying emotional difficulties.

### **Hypotheses**

- a. When compared with the comparison group it is predicted that there will be significant improvements for nurture group children in the general category of social and emotional difficulties as measured by total scores on the SDQ, and a significant reduction of clinical difficulties (as indicated by the SDQ categories 'borderline' and 'abnormal').  
In terms of group by time changes in specific domains as measured by the SDQ subscales it is predicted that, compared to the comparison group, nurture group children's:
  - b. Social skills will improve as indicated by an increase in the sub-scale of 'pro-social behaviour' and a decrease in 'peer difficulties'.
  - c. Behavioural difficulties will decrease as measured by the 'conduct problems' and 'hyperactivity' scales.
  - d. Emotional difficulties will also decrease as measured by 'emotional problems' subscale.
- Although the Boxall strands do not precisely correspond to these domains in (b–d) any changes found in this measure will be reviewed in relation to the findings.
- e. Nurture group children will improve significantly more than children in a comparison group, a national curriculum measure of academic achievement.

### **Methodology**

#### *Design*

This prospective study used a non-randomised pre-test, post-test design to examine full-time nurture groups in a large county local authority in the south-east of England adhering to the 'classic' nurture group model (Bennathan & Boxall 2000). A non-randomised between groups design was used comparing children who attended nurture groups with a comparison group. Children were assessed by their teachers at two time points, firstly when the children arrived in their nurture groups and again after approximately one-and-a-half school terms (mean of 23 weeks). Academic attain-

ment scores from formal academic assessments were used as a marker of educational progress at these time points.

### **Participants**

Selection of nurture groups and control schools was non-randomised and based on the willingness of schools to take part. All participants attended mainstream infant and primary schools from the same educational authority. Participants were in schools serving socially diverse populations in semi-rural and outer-city geographical areas with high levels of social and economic deprivation. Comparison group schools met the criteria, in terms of levels of social and economic deprivation, for funding of nurture groups but lacked space, funding or staff. The nurture and comparison groups were similar in terms of their pupil needs ranking, averaging a rank of 17.5 and 16.2 respectively (out of a total of 123 eligible schools). Ten nurture group schools and five control schools were included in the study. Exclusion criteria were the presence of a Learning Difficulty and English as an additional language. Children who were referred to a nurture group during the period April 2005 to October 2005 were included in the study.

Comparison group Heads and/or SENCOS from eligible schools identified children with emotional and behavioural difficulties who they would refer to a nurture group if one was available. Baseline scores of SEBD symptoms (see Results section) suggest that the groups were reasonably matched in terms of clinical difficulties. Random assignment was not possible as children were selected for the nurture groups according to severity of need, independently of this study. It was not appropriate to select the comparison group from the schools with nurture groups because levels of need would not have been comparable.

There were 44 nurture group children in the experimental condition and 39 in the control group. Three children from each

group left their schools between testing and could not be traced. Two children left their school following initial testing and were followed up for retesting. The age range of the total sample was 4 to 8 years, with a mean age of 5 years, 9 months. The groups were well matched in terms of gender and ethnicity and consisted of predominantly white British children (for demographics see Table 1).

### **Nurture group condition**

The nurture groups consisted of children attending for four-and-a-half days a week and returning to their mainstream classroom for registration, Physical Education and selected other lessons. Teachers had a mean of two years' specialist experience and had undergone the standard four-day training course. Each group (consisting of 10 to 12 children) was run by a teacher supported by a teaching assistant. The 10 teachers involved in this study had been working in the groups for between two months to six years (mean of two years). The settings included a kitchen and living area and the children followed a structured daily routine, including breakfast and snack time. Children were supported to take an active role in helping, as in a conventional family routine. On entry to the group, high levels of individual support were initially provided followed by increasing encouragement of children's independence. Physical proximity, eye contact and touch are also used when considered necessary to the development of a 'nurturing' relationship.

### **Comparison group conditions**

All children in the comparison group had been placed on 'School Action,' except for five children on 'School Action Plus.' All had individual education plans and received between none to three hours of academic support per week, predominantly in the mainstream class. The comparison group children identified as on 'School Action Plus' had received an assessment by an educational psychologist or a behavioural support teacher. However, comparison

Table 1: Demographic information regarding the two groups.

Variable	Nurture group	Control group	<i>t</i> value	<i>p</i> value
Females	16	13	<i>t</i> = -.29	<i>p</i> > .05, ns
Males	28	26	<i>t</i> = -.29	<i>p</i> > .05, ns
Mean age	5.6 years	6.0 years	<i>t</i> = -2.56	<i>p</i> < .05*
Academic attainment score at Time 1	3.68	6.52	<i>t</i> = -5.43	<i>p</i> < .001*
Number of non-White British children	4	5	<i>t</i> = -.54	<i>p</i> > .05, ns
Number of children receiving free school meals	23	17	<i>t</i> = -.78	<i>p</i> > .05, ns
Number of single parent families	17	11	<i>t</i> = -.10	<i>p</i> > .05, ns
Number of children fostered	2	2	<i>t</i> = .12	<i>p</i> > .05, ns
Number of children who experienced a life event during testing period	13	16	<i>t</i> = .82	<i>p</i> > .05, ns

\*Significant group differences

children did not receive the same intervention and planning procedures as nurture group children, their social and emotional difficulties were addressed predominantly within the main classroom. All comparison group children who met the study's inclusion criteria were included in the study.

## Measures

### *Strengths and Difficulties Questionnaire: Teacher Version (SDQ)*

The teacher version of the SDQ is a 25-item behavioural screening questionnaire, which has been widely used and validated with children aged 4 to 16 years (Goodman, 1997). Research indicates that it produces results consistent with other established behavioural measures (Goodman, 1999). Sub-scales for emotional problems, conduct problems, hyperactivity, peer relationship problems and pro-social behaviour are calculated. The total score does not include pro-social behaviour. Norms are available to

categorise scores into normal, borderline and abnormal ranges. The SDQ was deemed appropriate for use as an outcome measure due to its high rates of reported validity and the availability of normative standards for comparison. It was also a measure which had been used in Cooper et al.'s (2001) study of nurture groups and with which teachers in the schools were familiar.

### *The Boxall Profile*

The Boxall Profile is a normative, diagnostic 68-item teacher measure of children's emotional, behavioural and interpersonal functioning in classrooms (Bennathan & Boxall, 1998). This measure has been developed to monitor the functioning of nurture group children and used in studies exploring nurture group outcomes (Cooper et al., 2001; Iszatt & Wasileska, 1997). It is divided into two sections. The first section assesses developmental factors which impact on engagement with the learning process

and the subsequent section measures aspects of behaviour which may influence social and academic performance. The 68 items are rated on a four-point scale and divided into five sub-clusters: organisation of experience, internalisation of controls, self-limiting features, undeveloped behaviour and unsupported development. Although, the validity and reliability of the Boxall Profile have not been reported statistically, its use in earlier nurture group studies renders it an important outcome measure.

### *Measures of academic attainment*

Academic achievement was measured by recording a single average score derived from each child's National Curriculum attainment in Literacy and Numeracy. Although a proportion of the children included in this study are under 5-years-old and are not strictly speaking assessed through the National Curriculum (but rather the Early Years Foundation Stage), their progress was recorded by the nurture group teachers using P scales in order to offer a continuous indicator of academic achievement. The P scale is a means of recording progress of children working below level 1 of the National Curriculum.

'Level' is the term used to compare each child's ability against local and national standards of achievement. It takes on average two years to complete each level and each level is sub-divided, for example, 2A is higher than a 2B. By the age of 7-years-old (the upper age-range in this study) the majority of children are expected to be at Level 2. The P scales are split into eight different levels with P1 being the lowest and P8 the highest. Level P8 leads into national curriculum level 1. Because nurture group teachers used both Early Years Foundation Stage and the National Curriculum Levels, a continuous numerical scale was needed. The P scales (1–8) and National Curriculum level (1c–2a) were converted into a scale between 1 to 14 with P1 recorded as 1 and 2a (the highest National Curriculum level achieved in this study) as 14.

## **Results**

### *Statistical analysis*

There were three sets of outcome variables: the SDQ, the Boxall scales and academic achievement. We did not perform repeated measures analysis of covariance as a significant limitation of this traditional approach is that it aggregates changes across participants, so that a mean decrease can hide increases in some participants because of large decreases in other cases. To assure ourselves that this was not the case we created mixed effects linear growth curve models for all the outcome variables using a multi-level mixed-effects linear regression (STATA version 10.1 xtmixed procedure). The coefficients in Table 2 and 3 are slopes using robust standard errors to provide conservative estimates of statistical significance. Mixed effects models and general estimating equations use all available data. In these models group, occasion and their interaction were the categorical independent variables and age and general aptitude rated at baseline were continuous independent variables and participant was the random effect. We also contrasted the number of children moving from the clinical to the non-clinical range on the SDQ between pre- and post-treatment using exact probability statistics.

## **Results**

Preliminary exploration of the demographic data revealed that while the groups were well matched in terms of gender and ethnicity (see Table 1), the nurture group children were younger and had substantially lower academic levels at the point of recruitment. Both these differences were significant ( $t(81) = 2.56, p = .02$  and  $t(81) = 5.43, p < .001$ ). In comparing the outcome variables we controlled for both these influences. The primary outcome variable was teacher rated SDQ scores. Mean scores obtained from this measure are displayed in Table 2. We applied mixed effects models to these data testing the hypothesis that the change in nurture group ratings was significantly greater than

in the comparison group (Group x Time effect). Table 2 displays the significance of the model overall, and the effect associated with time and group x time interactions separately (with 95 per cent confidence intervals associated with each coefficient).

**Hypothesis a** – SDQ total problem scores showed no decrease over time for both groups considered together, but the decrease relative to the comparison group was greater in the nurture group by approximately three points.

Analysis of the SDQ sub-scales for both groups also revealed no significant changes over time. However, the change between baseline and end of intervention was significantly greater in the nurture group on three of the sub-scales.

**Hypothesis b** – Children participating in the nurture group were rated as declining in peer problems and increasing in pro-social behaviour significantly more than children in the comparison group.

**Hypothesis c** – There was a significant time by group decrease of hyperactivity in the nurture group condition but not in terms of ‘conduct difficulties’.

**Hypothesis d** – By contrast, no significant time by group change was found on the ‘emotional difficulties’ scale.

Using the published cut-points for clinical severity (Goodman, 1997) confirms the above findings. In this study children were judged as having clinical difficulty if they fell into the ‘borderline’ or ‘abnormal’ ranges as defined in the SDQ literature. There were no differences in the proportion of children rated as having clinically significant problems on the SDQ before the intervention but at post-test there were significantly fewer cases in the nurture group than in the comparison group ( $p < .05$ ) see graph, Table 3. The proportion of children rated as

scoring in the clinical range on the SDQ was unchanged in the comparison group (64 per cent to 61 per cent, n.s.) but was significantly reduced in the nurture group from 77 per cent to 53 per cent ( $p < .02$ ). The reduction of number of children rated above the cut-point was uniquely significant for the hyperactivity (.05), the peer problems (.01) and the pro-social (.05) subscales.

We examined four summary scales on the Boxall profile and the means and standard deviations and the results of the random effects regression are shown in Table 4. In the Boxall profile ‘organisation of experience’ ratings which were comparable at the beginning of the study increased significantly in both groups, but consistently more so in the nurture group as suggested by the significant interaction term in the random effects regression model, which controlled for both age and initial achievement levels. A similar pattern was observed for the ‘internalisation of control’ scale, although the advantage associated with attending the nurture group was substantially smaller. The ratings on the ‘undeveloped behaviour’ scale did not change over the time period nor did they distinguish the group significantly. The ‘unsupported development’ scales, however, decreased substantially for children attending nurture groups but less consistently for the comparison group, yielding a significant interaction effect.

**Hypothesis e** – Finally, we examined the teachers’ ratings of general attainment pre and post intervention for both groups, statistically controlling for age and initial ratings. The increase in attainment scores was statistically significant for both groups combined across the time period but the improvements were more consistent amongst the nurture group children (see Table 4).

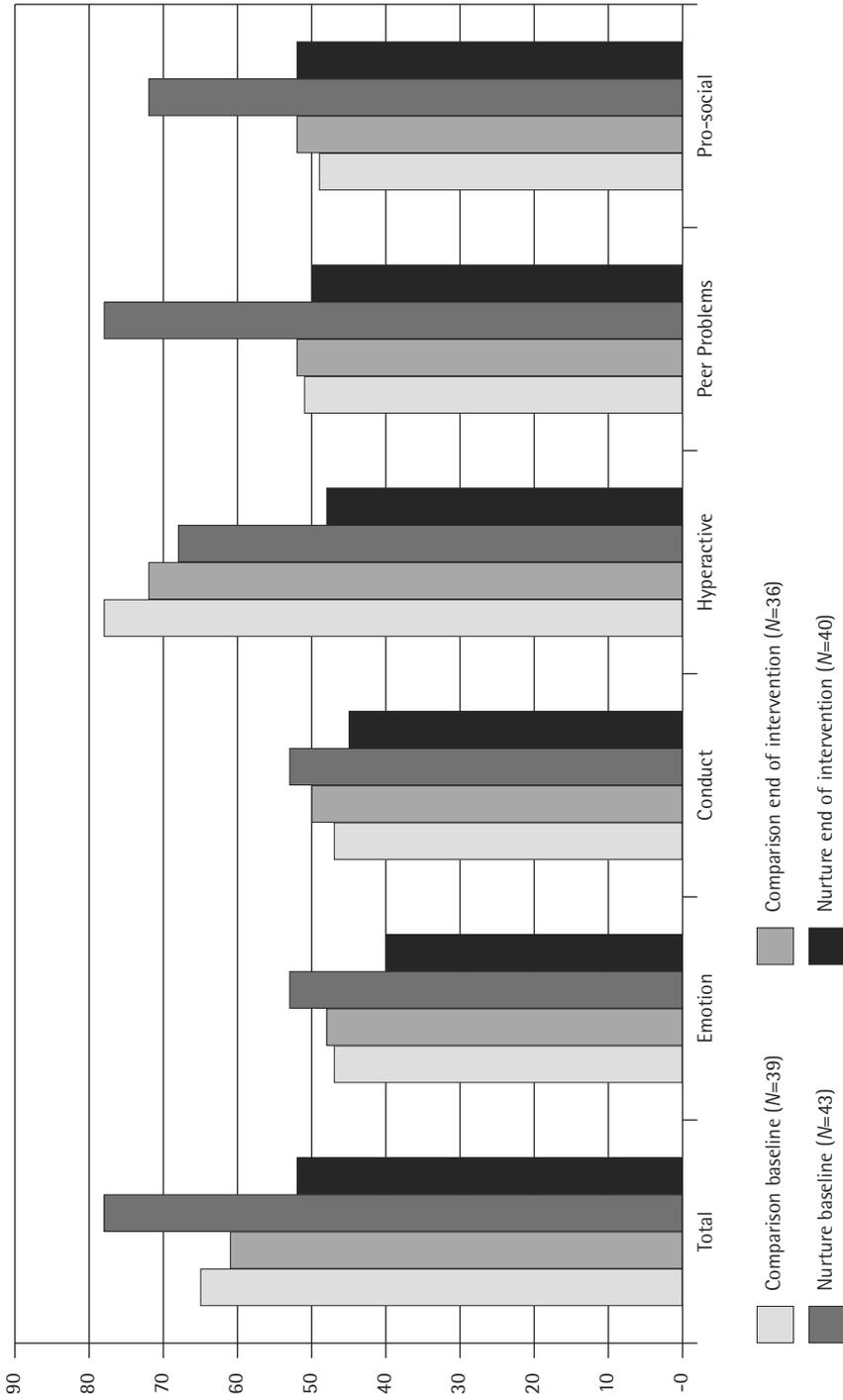
## **Discussion**

These findings support the primary hypothesis that social, emotional and behavioural functioning would improve in children in the nurture group, compared to a compar-

Table 2: Means (SDs) and the results of the random-effects regression on SDQ scores collected at baseline and after (mean) five months of intervention.

	Baseline mean (SD)		End of treatment mean (SD)		Wald Statistic $\chi^2$ (df=5)	p<	Rate of change (slope) of individual trajectory (exp $\beta$ k)				
	Nurture Group	Comparison	Nurture Group	Comparison			Change over time	Group effect over time	p<	Coefficient	p<
	N=43	N=39	N=40	N=36			Coefficient	Coefficient			
Total Problem Score	17.6 (4.6)	17.0 (6.6)	13.7 (6.1)	16.7 (8.2)	14.3	0.02	-0.47 (-2.9, 1.9)	n.s.	-3.3 (-6.6, -0.1)	0.05	
Emotion Scale	3.9 (2.6)	3.6 (3.7)	3.6 (2.5)	3.5 (3.1)	7.5	n.s.	-0.1 (-1.2, 1.1)	n.s.	-0.3 (-1.8, 1.2)	n.s.	
Conduct Scale	2.8 (2.3)	3.0 (2.5)	2.2 (1.9)	3.2 (2.8)	5.9	n.s.	0.1 (-0.6, 0.7)	n.s.	-0.6 (-1.5, 0.3)	n.s.	
Hyperactive Scale	6.5 (2.5)	6.9 (2.9)	5.3 (3.4)	6.9 (2.9)	23.0	0.0003	-0.2 (-1.1, 0.8)	n.s.	-1.1 (-2.4, -0.3)	0.02	
Peer Problems Scale	4.0 (2.0)	2.9 (2.2)	2.7 (2.1)	2.7 (2.1)	12.2	0.04	-0.2 (-1.0, 0.6)	n.s.	-1.1 (-2.2, -0.1)	0.05	
Pro-social Scale	4.2 (2.4)	5.1 (2.9)	5.7 (2.3)	5.3 (3.2)	29.8	0.0000	0.2 (-0.7, 1.1)	n.s.	1.4 (0.1, 2.6)	0.04	

Table 3: Percentages of children in nurture group and comparison group within clinical ranges of the SDQ at baseline and after (mean) five months of intervention.



ison group. Significant improvements were found in terms of overall social, emotional and behavioural functioning on total score of the SDQ. Children in the nurture group showed significant improvements in their peer problems and pro-social skills (SDQ subscales). They also showed a significant decrease in hyperactivity over time.

There were also significant time by group improvements found in nurture group children as measured by specific strands of the Boxall Profile. This tends to substantiate the SDQ findings as there is some conceptual overlap between items in the Boxall Profile (e.g. 'engages cognitively with peers' and 'responds constructively to others') and the peer relationships and pro-social behaviour subscales.

Results also demonstrated increasing levels of emotional difficulty and conduct problems in children not receiving the intervention. This finding is in line with research (e.g. Meltzer, 2000) demonstrating the incidence of incremental difficulties following early signs of social and emotional difficulties. This intervention appears to be effective for children with SEBD, who, when exhibiting difficulties at this developmental stage, are in the long term at heightened risk of developing psychiatric illnesses and anti-social behaviour (Rutter, 2003).

The nurture group children progressed significantly more than comparison group children in teacher ratings of general academic progress with some of the comparison group's ratings remaining virtually unchanged. This concerning finding illustrates the likelihood of academic underachievement in children with SEBD, a factor linked to gradual disaffection from school and avoidance of classroom tasks and homework, found in many such children (Humphrey et al., 2004; Malmberg & Little, 2007). Given that one criterion for selection for nurture groups is poor academic progress, improvement on this variable would appear to protect children from other risk factors associated with academic failure such as low self-esteem.

The analysis suggests that, at least in the initial stages of the group, the overall decrease in SEBD features in nurture group children may be due to improved social skills. The small group facilitates the development of interactive skills such as turn taking. The sustained emphasis on considerate behaviour facilitates positive social interactions between children that are mutually rewarding. It is also likely that the observed reductions in hyperactivity may be due to a closer affiliative system; nurture group children feel supported by their peers and teachers, thus reducing the anxiety provoked by large classrooms and unstructured social interactions.

Pro-social behaviour is known to predict peer acceptance (Dodge, 1983; Ladd et al., 1988). Children in nurture groups learn behaviour that renders them more rewarding and likable to both peers and adults. Underlying the development of social and friendship skills are a specific and evolving set of social and cognitive capacities, including empathy (Hay et al., 2004). Nurture groups place particular emphasis on promoting children's ability to recognise and communicate about feeling states in themselves and their peers. Improvements in peer group relationships have a protective function if they generalise into children's lives. Evidence suggests that these improvements are sustained in nurture group children; reintegration into the mainstream class has shown to be successful following time in nurture groups (Iszatt & Wasileska, 1997).

Nurture group children's interactions are also likely to be influenced by the teacher's attitudes to their peers, many of whom would in a mainstream classroom be experienced as 'disruptive.' Evidence suggests that peers make use of their observations of teacher-child interactions to inform their own interactions with a particular child (Hughes et al., 2001; Meehan et al., 2003), therefore, changed teacher attitudes can impact on peer acceptance (Zionts et al., 2004).

Table 4: Means (SDs) and the results of the random-effects regression on Boxall profile scores and general attainment ratings collected at baseline and after (mean) five months of intervention.

	Baseline mean (SD)			End of treatment mean (SD)			Wald Statistic $\chi^2$ (df=5)	p<	Rate of change (slope) of individual trajectory (exp $\beta$ k)			
	Nurture Group	Comparison	N=	Nurture Group	Comparison	N=			Change over time	p<	Group effect over time	p<
									Coefficient		Coefficient	
Organisation of Experience	8.1 (2.2)	8.9 (2.2)	N=44	10.1 (2.6)	9.6 (2.6)	N=36	62.2	0.0000	0.7 (0.0,1.4)	0.05	1.3 (0.38,2.2)	0.0006
Internalisation of Controls	7.4 (2.2)	8.0 (2.1)		9.0 (2.6)	8.6 (2.3)		44.1	0.0000	0.6 (0.02,1.2)	0.05	1.0 (0.2,1.9)	0.02
Undeveloped Behaviour	4.1 (2.6)	3.7 (2.7)		2.8 (2.3)	3.5 (3.3)		11.0	0.05	-0.2 (-1.1, 0.6)	n.s.	-1.0 (-2.2, 0.2)	n.s.
Unsupported Development	5.7 (3.2)	5.1 (3.7)		3.9 (2.6)	4.6 (4.1)		17.5	0.004	-0.05 (-1.5, 0.5)	n.s.	-1.4 (-2.7, -0.1)	0.05
Rating of General Attainment	3.7 (1.7)	6.5 (3.0)		5.0 (2.1)	7.2 (3.2)		844.3	0.0000	0.5 (0.11, 1.0)	0.02	0.8 (0.1-1.4)	0.02

Finally, adult to adult modelling of interactions in which discussions and differences are addressed appears to provide opportunities for children to observe adaptive models of conflict resolution which are key to enabling them to enjoy and develop through co-operative play. Such modelling, along with an emphasis on 'emotional literacy' (Goleman, 1996) may promote empathy in the children through 'inter-subjective' (Trevarthen & Aitkin, 2001) discourse and responses that are 'mind minded' (Meins et al., 2001).

Contrary to expectations, improvements in emotional or conduct problems were not identified. One possible contributor to this finding is that this particular sample were characterised more by social difficulties than by emotional and conduct difficulties, so that improvements in these features were the prime effect, whereas other nurture groups may affect children with different profiles differently. This speculation underscores the heterogeneity of problems found in children selected for nurture groups. An additional possibility is that the time between measurement points was shorter than the children's total attendance of the groups and improvements in emotional difficulties are likely to take longer (DfES Publications, 2004). The lack of detected emotional progress may also have been influenced by the limitations of the SDQ as a measure of mental health as it seeks to capture in only five items, symptoms of anxiety and low mood.

### **Limitations**

This study has the merit of being an ecologically valid outcome study, examining a highly regarded school intervention for children with SEBD. However, the sample was not randomised. Nor were the children matched for particular problems or levels of difficulty although scores on the baseline outcome measures were comparable. The heterogeneity of difficulties found in children attending nurture groups, aligned with small numbers of participants in each school, represents a challenge to any outcome study.

Although well matched in many respects, the comparison group differed significantly with regard to age and academic ability prior to testing. The statistical analysis took account of this and the numbers of participants were adequate to test broad group-by-time effects but restricted further investigation of sub-groups.

Attempts were made to minimise extraneous group differences, nonetheless the children were drawn from different schools and this may have been an uncontrolled condition effect which influenced the findings. The use of teacher-rated measures may well have given rise to a condition related bias, whereby the nurture group teachers were more familiar with the measures and the children and perhaps more optimistic about progress. The SDQ findings would have been strengthened if the Parent SDQ had also been used, however, at the outset of groups, some parents were reluctant to complete these measures so the numbers of parent measures were too few to analyse. Use of more sensitive measures of the individual components of SEBD would also have added robustness to the findings, as would a standardised measure of academic ability.

Although significant changes were found, it is quite possible that if the study were carried out over a longer time period, further evidence of change would have emerged as in the Glasgow (2007) evaluation. Previous research indicates that groups need to operate for a minimum of two years to be fully effective (Cooper & Tikhaz, 2005).

### **Conclusions**

In summary, results indicate that the intervention does improve children's functioning, in line with other studies of nurture groups (Cooper & Whitebread, 2007; Cooper et al., 2001; Iszatt & Wasileska, 1997). The finding that nurture group children most markedly improve in terms of social functioning is in line with a core aim of the intervention, which is to improve children's social skills and develop empathy and awareness of other's feelings and minds.

Previous studies of nurture groups have mainly examined global SEBD outcomes on the total SDQ, thus further research is needed to evaluate the different facets of SEBD, using more sensitive measures, thus identifying the key mechanisms of change and enabling educationalists to build on the most effective aspects of these groups. Further studies are needed to replicate the finding that improvements in social functioning are the main mechanism of change. Follow up over an extended period is needed to explore the (probably multiple) routes by which the intervention influences future developmental pathways. One likely contributor to the success of nurture groups is the changed relationship between schools and the parents of nurture group children (Cooper & Tiknaz, 2007; Glasgow City Council, 2007) and this merits further inves-

tigation. The extant findings and current levels of investment are sufficiently substantial to justify the costs of a randomised control trial, since more extensive and rigorous investigation is needed which draws from larger populations and uses clear inclusion criteria. Of particular relevance to nurture groups is further investigation of the attachment paradigm, which centrally informed their development (Bennathan & Boxall, 2000).

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