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Evaluation of the Barnet Early Autism Model (BEAM) teaching intervention programme in a 'real world' setting

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ABSTRACT

The Barnet Early Autism Model (BEAM) for children with Autism Spectrum Disorder (ASD) was compared to a time-comparable approach (Portage) in terms of child outcomes and parental functioning. BEAM produced improvements in the adaptive behavioural function and language abilities of the children with ASD. Additionally, the programme produced decreases in parenting stress and improvements in the parents' perceptions of their own limit setting abilities. In contrast to these areas of success, it was noted that BEAM did not significantly impact on the behavioural problems of the children. Overall, BEAM produced significant benefits to the children receiving this intervention, although it may be that a more intensive programme, involving an increase in applied behaviour analytic content, would help to improve the behavioural aspects of the children's functioning.

1. Introduction

A number of early teaching intervention programmes have been suggested as offering benefit to children with Autism Spectrum Disorders (ASD). The results of outcome effectiveness studies almost universally show that Applied Behaviour Analytic (ABA) intervention programmes are effective in comparison to other forms of approach (e.g., Howard, Sparkman, Cohen, Green, & Stanislaw, 2005; Reed, Osborne, & Corness, 2007), but they also show that other educational approaches can offer benefits (Magiati, Charman, & Howlin, 2007; Reed et al., 2007; Reed, Osborne, & Corness, 2010). Importantly for many Local Authorities, the immediate financial costs of adopting ABA programmes are an obstacle to the wholesale use of such interventions. Moreover, interest in the child's social–emotional development has been relatively poorly represented in behaviour-analytic research (Hayes & Wilson, 1993; McHugh & Reed, 2008), which can be regarded as a potentially important omission in such interventions (Waddington & Reed, 2009).

To address these issues, Local Authorities have offered their own early interventions, often based on some aspects of ABA, but also using additional teaching procedures as well. However, there have been few evaluations of such approaches, and data on their effectiveness would be extremely helpful in the design of future programmes. One such programme (the Scottish Centre for Autism Preschool Treatment Programme) was evaluated by Salt et al. (2002). In this programme, children and parents visited a nursery setting for a short period (eight hours over every two weeks), and work was conducted with the children (Salt et al., 2001, for full details). It was found that, while there was some gain in behavioural ability, this was no more than would be expected through normal changes in chronological age.

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Similarly, Reed, Osborne, and Gibson (2000) documented the impact of the Parents of Autistic Children Training and Support (PACTS) programme, which involved around 12 h a week of 1:1 ABA-type education, following a parent training scheme, and which was supervised in two-weekly visits by a trained facilitator. This programme was found to impact on the intellectual functioning of the children with ASD, but to a lesser extent than a more intensive ABA programme, although it had only marginal effects on adaptive behavioural gains.

Given the scant evidence concerning such Local Authority provided services, it is little wonder that parents will argue strongly for more expensive and intensive ABA approaches. Although the evidence-base with regard to such ABA interventions is certainly flawed (Connor, 1998; Mudford, Martin, Eikeseth, & Bibby, 2001), and there are areas of functioning not typically addressed by these approaches, ABA has, at least, a platform of data from which to argue a plausible case (Howard et al., 2005; Lovaas, 1987; Reed et al., 2007). Thus, it is critical that the many Local Authority approaches that are offered receive adequate evaluation, so that progress towards developing the best early intervention programmes for children with ASD can be facilitated.

In a widely circulated report to Local Authorities, Reed, Osborne, and Corness (2004) suggested that, in addressing these issues, Local Authorities should adopt an approach that had an initial period of parental training, followed by an ABA-based approach for about one year. It was suggested that this teaching should then be phased into more group-based work with the child. In response to this report, and in response to concerns over the development of the emotional functioning of the child with ASD, Barnet Local Authority developed their own approach; the Barnet Early Autism Model (BEAM), which adopts the main suggestions of this report.

The present evaluation study will provide an assessment of the effectiveness of the BEAM intervention as it works in practice (rather than in a controlled clinic/laboratory setting), and focuses on assessing two aspects of this programme. Firstly, it will examine the impacts of the programme on the children, including their intellectual functioning, language abilities, adaptive behaviour, and behaviour problems. Secondly, the evaluation will examine the impact of the programme on parental functioning, including parenting stress, perceived limit setting ability, and satisfaction with parenting. These aspects of parenting have been shown to be critical to the success of early educational interventions (Osborne, McHugh, Saunders, & Reed, 2008a, 2008b).

As a comparison group, the children undergoing BEAM will be compared against children undergoing an alternative intervention. The 'alternate treatment' evaluation has been thought of as providing a conservative test of a treatment's outcome effectiveness (Hohmann & Shear, 2002; Reed et al., 2007). Hence, children undergoing Portage interventions were chosen as a control group. These children were thought of as suitable for this purpose, as Portage offers some similar features to the BEAM programme; both are supervised by trained facilitators, involve 1:1 teaching, and involve similar numbers of hours per week, making the comparison a reasonable one for the effectiveness of BEAM.

2. Method

2.1. Participants

Participants were selected in conjunction with Barnet Local Authority for the BEAM intervention, and similar Local Authorities (in terms of population and socio-economic status) across the South East of England for the control (Portage) intervention. This sampling lasted for the period of one year. There were a number of inclusion criteria applied: the participants had to have a diagnosis of either autism or pervasive developmental disorder not otherwise specified; the diagnosis had to be made by a paediatrician independent from the current study using the diagnostic criteria for autism or pervasive developmental disorder not otherwise specified in the DSM-IV-TR (these were usually made based on clinical judgement and a variety of standard tests employed by the paediatrician, which varied from paediatrician to paediatrician); the participants had to be at the start of their selected intervention, and not receiving any other major intervention for the duration of the study; and the participants had to be below 5 years of age. Thus, it should be noted that the assignment to either BEAM or Portage treatment was not random, but was determined by the parental choice to participate in that programme offered by their Local Authority.

In total, thirty-two participants were identified (16 in each group), and all parents of these children agreed to their participation. In terms of the estimated sample size required for finding statistical effects, previous studies have employed between 11 and 19 participants per group, and have obtained medium effect sizes for such interventions ($d = 0.5$ approx.). In fact, with power = 0.8, and $d = 0.5$, then $N = 32$.

The characteristics of the participants are shown in Table 1. Inspection of these data shows that the participants in the two interventions were reasonably well matched. There were some numerical differences between the two groups (e.g., IQ), but these differences were not statistically significant, as revealed by independent t-tests, conducted on the baseline scores.

2.2. Interventions

Both interventions studied offered similar mean numbers of hours per week of intervention to one another: beam = 6.4 ($\pm$2.1), Portage = 8.5 ($\pm$6.8), $t < 1$.

Table 1
Mean (standard deviation) baseline scores for the children in the two samples.

Measure	BEAM group	Portage group	t (30)
Age (months)	43.6 (5.8)	40.1 (8.3)	1.41 $p > 0.10$
Autistic Severity (ABC total)	59.8 (16.1)	58.8 (23.8)	<1
Intellectual Functioning (Leiter overall)	83.3 (23.7)	72.6 (12.5)	1.59 $p > 0.10$
Adaptive Behaviour (Vineland composite)	70.2 (4.1)	68.6 (6.0)	<1
Language (Peabody overall)	59.9 (19.5)	55.3 (14.7)	< 1
Behaviour Problems (DBC total)	41.1 (11.6)	35.8 (12.8)	1.22 $p > 0.20$

2.2.1. Barnet Early Autism Model (BEAM)

Barnet Early Autism Model (BEAM) is delivered at home, in liaison with the child's parents. BEAM is delivered to the child on a 1:1 basis, by a team of professionals. The programme is primarily delivered by trained BEAM facilitators, working under the direction of an Advisory Teacher. Additional input is provided by a designated Speech and Language Therapist; Occupational Therapist, and an Educational Psychologist. This team works in close collaboration with the parents/carers and other family members.

A clear set of principles guided the BEAM programme: a thorough and on-going assessment of each individual child's needs, positive use of structure and routine, building on areas of strength and attempting to minimise stress for the child, utilising opportunities for learning to learn, visually supported learning, an emphasise on the development of communication and social interaction, use of behavioural strategies as appropriate; direct teaching of self-help and life skills, and parent support and participation in their child's individual programme.

The BEAM programme was designed individually, based on the needs of the particular child, and involved daily visits to the home by the facilitator to work with the parents and child. BEAM utilises a wide range of interventions, which have been proven to be effective in the research literature. Interventions are selected to suit the needs of each child, and are designed to mesh with a differentiated Foundation Stage Curriculum (i.e., the part of the school curriculum in the UK that focuses on the objectives for young children), thus, preparing each child for transition to an educational setting. Each programme operates within the framework of the Social Communication, Emotional Regulation, and Transactional Support (SCERTS) model (Prizant, Wetherby, Rubin, Laurent, & Rydell, 2003), which derives from a theoretical, as well as a research-based, foundation, and addresses the core challenges of children with ASD, namely Social Communication, Emotional Regulation and Transactional Support. Alongside SCERTS, all BEAM programmes focus on autism-specific areas of need: Social Communication; Social Understanding; and Flexibility of thought and social imagination.

In addressing social communication, interventions also include Picture Exchange Communication System (PECS; Frost & Bondy, 1998), which is a proven strategy for developing real and spontaneous communication skills, symbol programmes, signing programmes including Makaton (where appropriate), and semantic/pragmatic programmes. All children followed individualised language and communication programmes devised by the BEAM Speech and Language Therapist.

In addressing social understanding, interventions include child-centred approaches, such as Interactive Play (Christie & Prevezer, 1998), Musical Interaction (Prevezer, 1990), and Intensive Interaction (Nind, 1999). In addressing flexibility of thought and social imagination, interventions include Treatment and Education of Autistic and Related Communication Handicapped Children (TEACCH) – an ASD-specific approach, which provides visual information, structure and predictability, and capitalises on many children's strengths in visual skills, and adherence to routine, in order to develop skills, and minimise difficulties (Schopler, Mesibov, & Hearsey, 1995). BEAM programmes also address play skills, and utilise computer- and technology-based learning. All programmes are rooted in techniques derived from behavioural theory, including task analysis, systematic positive reinforcement, and chaining. In addressing sensory issues, interventions include a sensory curriculum, devised and monitored by a BEAM occupational therapist, and, where appropriate, programmes include Sensory Integration, use of aerobic activity, and Conditioned Relaxation. Further details of the programme and the manual are available from Barnet Local Authority.

2.2.2. Portage

Portage is a home-based teaching programme for preschool children with special educational needs, and has been used for children with ASD (Reed et al., 2007). As with BEAM, the Portage programme is supervised by a trained Portage worker, who attended training courses in the delivery of portage for children with ASD. The Portage worker visits the parent/s once a week, and demonstrates to the parent/s how to apply the Portage system to target the specific goals agreed for the coming week. The work was then conducted 1:1 with the child delivered by the parent/s. The training sessions conducted with the child are brief, usually about 40–60 min per day with the child. The programme also shares some elements with approaches such as Floortime (Greenspan & Wieder, 1997). The children are taught new skills through the use of questions and tasks, prompts, and rewards. The skills to be taught are outlined in the portage manuals, and each individual skill acquired is used to built into larger and more complex behaviour responses. Monitoring and evaluation of progress occurs at the supervisors visits.

2.3. Measures

2.3.1. Autism Behaviour Checklist

(ABC: Krug, Arrick, & Almond, 1980) was employed to assess the severity of the autism of each child. The ABC is a 57-item checklist. A total score of 67, or more, is taken to suggest *probable* autism. Scores between 55 and 67 suggest *possible* autism. Some reports on reliability have been good (Volkmar et al., 1988), although its convergence with other instruments is less so, possibly reflecting the ABC's somewhat broad-based symptom focus (Shaffer, Lucas, & Richters, 1999). No special training in administration or scoring is required, and, in the current study, it was completed by parents (Volkmar et al., 1988).

2.3.2. Leiter International Performance Scale-Revised

(Leiter-R; Roid & Miller, 1997) measures intelligence and cognitive abilities in ages 2.0–20.11 years. For this study, the Visualisation/Reasoning Battery was employed, which emphasises nonverbal, fluid intelligence, and is not significantly influenced by the level and quality of the child's educational, social, and family experience. The internal-consistency reliability coefficients are above 0.80, and there is also good test–retest reliability for the younger age ranges. The Leiter IQ correlates 0.83 with the full-scale IQ on the Wechsler Intelligence Scale For ChildrenWISC-III.

2.3.3. Peabody Picture Vocabulary Test

(PPVT; Dunn & Dunn, 1997) is a measure of receptive vocabulary. It is an individually administered, norm-referenced, test, which contains 175 test items arranged in order of increasing difficulty. The test is suitable for ages: 2–6 through to 90+. The internal consistency is 0.95, with a test–retest correlation of 0.92. Correlations with the Stanford Binet Vocabulary subtest ranged from 0.68 to 0.76.

2.3.4. Vineland Adaptive Behaviour Scale

(VABS; Sparrow, Balla, & Cicchetti, 1990) is a semi-structured interview, administered to a parent, or other caregiver, of the child. The VABS assesses children's day-to-day adaptive functioning. Scores from four domains of adaptive behaviour (communication, daily living skills, socialisation, and motor skills) can be converted to standard scores, and a composite overall score can be derived, based on the sum of the subscales' standard scores (mean = 100; standard deviation = 15). Sparrow et al. (1990) have reported that the internal reliability of the overall composite score is 0.93.

2.3.5. Developmental Behaviour Checklist

(DBC; Einfeld & Tonge, 1995) measures the extent of problem behaviours exhibited by children. The Parent Report version of the DBC was employed, which contains 96 individual items, which were derived from case files of children and adolescents with developmental disabilities. It is a behaviour-rating questionnaire developed upon, and standardised for, populations of children and adolescents with intellectual disabilities, and it has excellent psychometric properties: internal reliability = 0.94 (Einfeld & Tonge, 1995). The DBC gives a Total Problem Behaviour Score (with a score of 46, or greater, on this scale representing a clinically significant problem). This scale has been used extensively for young people with ASD (e.g., Hastings & Johnson, 2001).

2.3.6. Questionnaire on Resources and Stress

(QRS-F; Friedrich, Greenberg, & Crnic, 1983) is a 52-item, self-administered, true/false tool, designed to measure parental perceptions of the impact of a developmentally delayed, or chronically ill, child on other family members. The QRS-F consists of four subscales, which assess parental perceptions about: *Parent and Family Problems* – dealing with the impact that the disability has on family activities or relationships; *Pessimism* – related to parent depression; *Child Characteristics* – dealing with the impact of the child's problems on the family; and *Physical Incapacity* – which examines the family problems produced by the child not being able to perform certain activities for themselves. These scores summate to produce a *Total Stress Score* (0–52). Higher scores are indicative of greater perceived stress within the family, as perceived and indicated by the parents (but not, it should be noted, of a greater degree, or number, of actual stressors, Dyson, Edgar, & Crnic, 1989). The internal reliability of the *Total Stress Score* is 0.89. This tool has previously been employed for samples with ASD in assessing stress in parents (Hastings & Johnson, 2001), and so allows comparison with previous studies. The total stress score from this scale has been shown to have good reliability and validity for research with parents of young children with ASD (Honey, Hastings, & McConachie, 2005).

2.3.7. Parent–Child Relationship Inventory

(PCRI; Gerard, 1994) is a 78-item, self-administered, tool to assess parents' attitudes towards parenting and their parenting behaviours. The items are selected to measure a wide variety of parenting dispositions and behaviours. All of the items have a Likert-type, 4-point, response format: strongly agree, agree, disagree, and strongly disagree. There are seven scales, which each produce a standardised *T*-score (mean = 50, standard deviation = 10), where high scores reflect positive orientations and "good parenting" behaviours. According to Gerard (1994), *T*-scores above 40 are indicative of "good parenting" behaviours and skills. Whereas, *T*-scores of less than 40 indicate problems in the particular domain reflected by that scale, and *T*-scores less than 30 suggest serious problems in that domain. Two scales were selected for analyses in this study: *Satisfaction with Parenting*, and *Limit Setting*, as these were deemed to be of particular interest. The internal reliability

(alpha coefficients) of the scales used was 0.80, and they had a mean test–retest reliability of 0.81. The PCRI has good correlation with other instruments that measure parenting behaviours (Coffman, Guerin, & Gottfried, 2006; Gerard, 1994). Heinze and Grisso (1996) reviewed the PCRI, amongst other instruments of parenting capacity, and their results lead them to conclude that the PCRI was a useful measure. The PCRI has been utilised in various research settings, for instance, in order to assess outcome effectiveness of various interventions, such as the Family Mentoring Program, and has been found to be a useful measure for such purposes (e.g., Baron-McKeagney, Woody, & D'Souza, 2002; Osborne et al., 2008b).

2.4. Procedure

The parents of the children, identified by the Local Authorities, were contacted by the researchers, and, on choosing to participate, parental consent was received. These parents were selected as they were recruited onto the programmes. The children were visited by a Psychologist, and the baseline child measures were taken (Leiter, VABS, and Peabody). Parents were contacted, at this time, and asked to complete the ABC, DBC, QRS-F, and PCRI questionnaires, independently from the researchers. The questionnaires were sent out by post to the parents, along with an information letter, and a pre-paid, addressed, return envelope. The information letter provided contact details, offering parents the opportunity to seek help and guidance, if required, regarding the completion of the questionnaires. However, it was extremely rare that any parents contacted the researchers in order to ask advice about answering specific questions. On completion, the parents used the pre-paid envelope to return the questionnaires to the researchers. If parents had not returned the questionnaires after a period of time, they were contacted by a researcher, via telephone, and reminded, and given the opportunity to return the completed questionnaires, at that point.

After ten months, the follow-up child measures were taken by a Psychologist. All parents were asked to complete the ABC, DBC, QRS-F, and PCRI questionnaires again, and to return them by post, as described above. The scores from these follow-up assessments were compared with those from the baseline assessments in order to ascertain the impact of the programme on a range of measures over the ten month period.

3. Results

3.1. Child characteristics

Fig. 1 shows the change scores (follow-up minus baseline) for the child characteristics in the two groups. Comparison of the two groups revealed a numerical advantage for the children in the BEAM programme in terms of their gains in adaptive behaviour, and language, relative to the children in the Portage group. These data were analysed by a multivariate analysis of variance (MANOVA) conducted on the change scores for the two groups, which revealed a statistically significant group difference, Pillai's Trace = 0.780, $F(5,26) = 18.39$, $p < 0.001$. Separate analyses of variance (ANOVA) conducted on each of the child dependent variables, revealed a statistically significant group difference for adaptive behaviour, $F(1,30) = 90.27$, $p < 0.001$, and for language, $F(1,30) = 5.83$, $p < 0.05$.

3.2. Parent measures

Levels of parenting stress (total QRS score) were taken for both groups at baseline, and showed high, but similar, levels for parents in both groups: BEAM = 27.3 (±8.1); Portage = 30.0 (±6.9); $p > 0.30$. Baseline levels of self-perceived limit setting, and

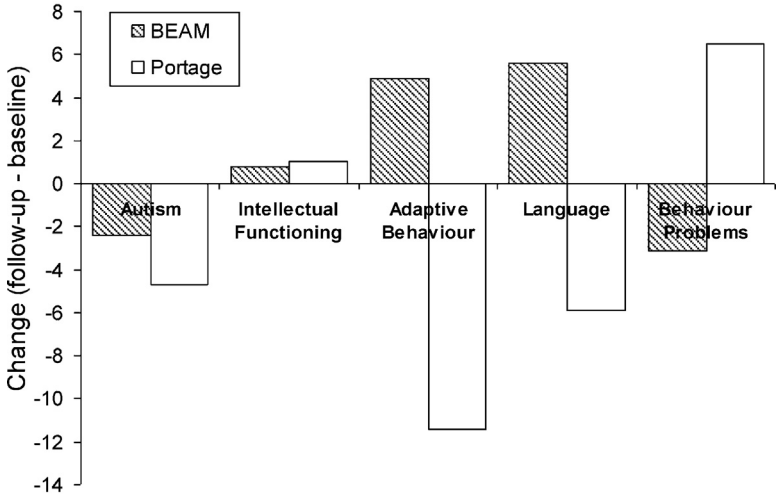

Fig. 1. Mean group change scores for the child outcome measures (follow-up score, minus baseline score). Autism = Autism Behaviour Checklist, Intellectual Functioning = Leiter, Adaptive Behaviour = Vineland, Language = Peabody, Behaviour Problems = Development Behaviour Checklist.

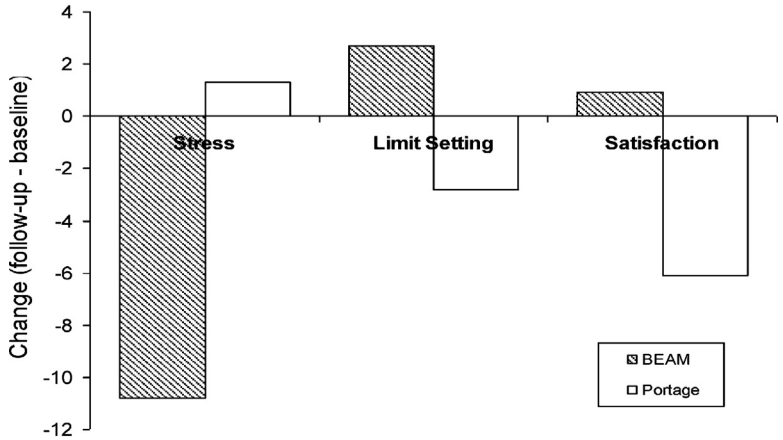

Fig. 2. Mean group change scores for the parent outcome measures (follow-up score, minus baseline score). Stress = Questionnaire on Resources and Stress, Limit Setting and Satisfaction = Parent Child Relationship Inventory.

satisfaction with parenting, were also taken through the PCRI, and showed similar scores in both groups that were close to the population mean (50). For self-perceived limit setting: BEAM = 47.1 (±3.7); Portage = 48.9 (±7.5); $t < 1$. For satisfaction with parenting: BEAM = 51.4 (±5.1); Portage = 49.0 (±7.3); $p > 0.30$.

Fig. 2 shows the change in the parent measures from baseline to follow-up for the parents of the children in the two intervention groups. Comparison of the two groups revealed a numerical advantage for the children in the BEAM programme in terms of their gains in adaptive behaviour, and language, relative to the children in the Portage group. These data were analysed by a MANOVA conducted on the change scores for the two groups, which revealed a statistically significant group difference, Pillai's Trace = 0.569, $F(3,28) = 12.30$, $p < 0.001$. Separate analyses of variance (ANOVA) conducted on each of the parent dependent variables, revealed a statistically significant group difference for stress, $F(1,30) = 26.70$, $p < 0.001$, limit setting, $F(1,30) = 8.53$, $p < 0.01$, and for satisfaction, $F(1,30) = 9.30$, $p < 0.01$.

Correlations between the baseline levels of parenting stress (QRS) and follow-up measures of child functioning were also taken across the sample, as a whole. These correlations showed statistically significant negative relationships between parenting stress at baseline and: follow-up adaptive behaviour, $r(30) = -0.304$, $p < 0.05$; and follow-up linguistic functioning, $r(30) = -0.355$, $p < 0.05$. There was also a marginally statistically significant positive relationship between baseline parenting stress and follow-up child behaviour problems, $r(30) = 0.271$, $p < 0.07$. There was no statistically significant relationship between baseline parenting stress and follow-up child intellectual functioning, $r(30) = -0.217$, $p > 0.10$.

4. Discussion

This investigation compared the BEAM intervention programme with a somewhat similar approach (Portage). In addition to the child outcome measures, measures of self-reported parental functioning were also taken. This study noted a number of areas in which the BEAM programme compared favourably with the comparison group (Portage). In particular, the BEAM intervention programme produced improvements in adaptive behavioural functioning, and in the language, of the children with ASD. Additionally, the BEAM programme produced decreases in the key area of parenting stress, and improvements in the parents' perceptions of their own limit setting abilities. In contrast to these areas of success, it was noted that the BEAM programme did not significantly impact on the development of the children's intellectual functioning, and offered no statistically significant improvement in their behavioural problems.

These results suggest a number of areas that need to be considered in the development of the currently assessed programme (BEAM), and for other programmes being planned by Local Authorities. The impacts on adaptive behaviour, and language, by the BEAM intervention programme are very encouraging, and these improvements are, at least, as impressive as those noted from much longer, and more time-intensive, ABA and special nursery placements (cf. Charman, Howlin, Berry, & Prince, 2004; Reed et al., 2007). However, the fact that child behavioural problems were not significantly impacted by this programme, and that intellectual functioning (while not decreasing, relative to the typically developing population, over the nine months) was not improved, suggests that an increase in the behavioural aspects of the BEAM programme, perhaps coupled with a slight raise in the temporal intensity, would reap some benefits in these areas. There are, of course, unresolved issues as to whether improvements in intellectual functioning, or in adaptive behavioural functioning, or in linguistic functioning, are most important in predicting future success in school and education for children with ASD. These issues are beyond the scope of the present report to comment upon, but they should be noted.

Impressively, the BEAM programme impacted on the key area of parenting stress, which has been shown, previously, to have detrimental effects on gains made in educational programmes (Osborne et al., 2008a), and this finding was also noted in

the current study. Also potentially important was the improvement in the parents' perceptions of their own limit setting behaviours. This aspect of parenting behaviour has been found to impact negatively on subsequent parenting stress, and to impact negatively on the development of subsequent behaviour problems in children with ASD (Osborne et al., 2008b). Thus, the BEAM programme's initial parental training package is having the desired effect.

Despite the quite positive results of this evaluation study, it should also be noted that the current study has some limitations, which should be taken into account, as they may impact on the generality of these findings. Firstly, the time between the baseline and the follow-up assessments was relatively short. Given that the BEAM programme is not time-intensive, during this short period, it may have been difficult to see significant progress in all of the developmental domains, and certainly difficult to see progress similar to that evident for the more time-intensive programmes. That there were some gains over this relatively short period is, therefore, a good indication of the effectiveness of the BEAM intervention programme. However, future studies would benefit from the inclusion of a follow-up measure taken some months after the programme had terminated. Secondly, the assignment to either the BEAM or Portage programme was not random, but was determined by parent choice. Of course, non-random allocation has potential problems in terms of generalisation of the results, as it is not clear whether the characteristics of parents who chose one programme versus another differed. However, while such non-random allocation is a limitation, it can also be regarded as a strength, in terms of the 'real world' validity of the findings, as parents do not generally choose an early educational intervention for their child at random. Thirdly, the assessment may have benefited from a blind assessment of the children, in this case the assessor was aware of the programme being undertaken. While a blind assessment would have been preferable, in practice, we have found that it is entirely possible for assessors to become aware of the programme during the assessment, from either the parents or the children.

In summary, the above results show that the BEAM intervention programme has produced some evidence for effectiveness, especially in relation to improvements in the children's adaptive behaviour, and language ability. These improvements may well be an important aspect that is predictive of future performance, and success. There was less of an impact on the children's intellectual functioning, and behaviour problems, although neither of these aspects of the children's outcomes deteriorated over the period of the assessment. It may well be that a more time-intensive programme, involving a slight increase in the number of hours, would help to improve these particular aspects of the children's performance. It may also be that some additional attention may need to be placed on the precise components of the BEAM intervention programme in order to deal with these aspects of the children's behaviours, although this development would be standard in the evolution of any intervention programme.

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