

Evaluating the effectiveness of teacher training in Applied Behaviour Analysis

IAN M. GREY KARE Services, Newbridge and Trinity College Dublin, Ireland

RITA HONAN Trinity College Dublin, Ireland

BRIAN MCCLEAN Brothers of Charity, Roscommon, Ireland

MICHAEL DALY Trinity College Dublin, Ireland



Journal of
Intellectual Disabilities

© 2005

SAGE PUBLICATIONS

London, Thousand Oaks

and New Delhi

VOL 9(3) 209–227

ISSN 1744-6295(056695)9:3

DOI: 10.1177/1744629505056695

Abstract Interventions for children with autism based upon Applied Behaviour Analysis (ABA) has been repeatedly shown to be related both to educational gains and to reductions in challenging behaviours. However, to date, comprehensive training in ABA for teachers and others have been limited. Over 7 months, 11 teachers undertook 90 hours of classroom instruction and supervision in ABA. Each teacher conducted a comprehensive functional assessment and designed a behaviour support plan targeting one behaviour for one child with an autistic disorder. Target behaviours included aggression, non-compliance and specific educational skills. Teachers recorded observational data for the target behaviour for both baseline and intervention sessions. Support plans produced an average 80 percent change in frequency of occurrence of target behaviours. Questionnaires completed by parents and teachers at the end of the course indicated a beneficial effect for the children and the educational environment. The potential benefits of teacher implemented behavioural intervention are discussed.

Keywords Applied Behaviour Analysis; autism; behaviour support plan; Ireland; schools; service delivery

Introduction

The report of the Irish Task Force on Autism makes many excellent recommendations for service provision with respect to autistic spectrum disorders (ASDs) (Department of Education and Science, 2001). Among them is the policy priority of resourcing and implementing educational services for children with an ASD. One aspect of this in practice may require providing

teachers involved with such children with the skills necessary to develop and implement school-based programmes derived from validated and successful methods of educating these children. This article sets out to evaluate the effectiveness of a specialist course in Applied Behaviour Analysis for teachers working primarily with children with an autistic spectrum disorder.

Applied Behaviour Analysis (ABA) has a long history in the effective treatment of autism and other developmental disorders such as intellectual disability. Specifically, its systematic application has been shown to improve communicative language, enhance social interaction, and improve academic skills in these areas (Smith, 1999). It has a number of key features which include (1) an emphasis on positive reinforcement procedures to build behavioural repertoires; (2) functional assessment of individual behaviour; (3) the use of scientific methods to evaluate the effects of interventions; (4) individualization of goals and instructional procedures; (5) gradual, systematic progression from simple to more complex skills; (6) transfer of instruction from structured to natural settings; and (7) training of parents and others to implement interventions in multiple environments (Green, 2001). The implementation of ABA is of particular relevance to autism as it is the only method of instruction which has shown consistent empirically supported improvements in the core deficits of the disorder (Eikeseth et al., 2002; Howard et al., in press; Lovaas, 1987; Maurice et al., 1996; Smith, 1999). It is noteworthy that the gains observed in these studies have substantial social validity as reported by parents. Specifically, parents using home-based ABA programmes have reported a 'positive impact of ABA on the lives of their children, their family life, and themselves' (Dillenburger et al., 2004, p. 120). Non-behavioural and individual therapies such as facilitated communication and psychoanalysis have, to date, not been shown to be effective in research studies of the treatment of autism (Maurice et al., 1996).

Despite the demonstrated effectiveness of ABA, there are difficulties with its use in typical school settings. Factors such as availability of skilled practitioners, intensity of treatment, staffing requirements, specialist supervision, and acceptance as an educational intervention mitigate against its implementation. Available research suggests that ABA is most effective when used by highly trained behaviour analysts for between 25 and 35 hours per week in the early years (before age 5) (Eikeseth et al., 2002; McEachin et al., 1993). This often requires an intensive teacher:student ratio of 1:1 or 2:1 (Robertson et al., 2003). These characteristics render ABA an expensive option for service planners in comparison to existing educational services. This may account for the observation that, at present, very few classrooms implement ABA in typical classroom settings (Department

of Education and Science, 2001). Another potential factor is the limited availability of specialist training for teachers in ABA and autism itself.

The importance of specialist training cannot be overemphasized as children with autism require a 'unique curriculum' to reduce the global deficits characteristic of autism (Scheuermann et al., 2003). The depth and complexity of behavioural support knowledge required for these children generally extends beyond the current inputs provided in existing teacher training programmes in the Republic of Ireland. In addition, one recent survey indicated that half of teachers never had the opportunity to develop skills in the implementation of autism intervention approaches (Kinsella, 2000). What may be required is specialist training which incorporates supervision, coaching, technical assistance, feedback and support in ABA (Scheuermann et al., 2003). Such training may be regarded as expensive but is likely to be substantially less than a continued reliance on costly external consultants to provide assessments and IEPs for children (McClellan et al., in press). Teachers also typically report dissatisfaction with this type of consultancy model and often express the view that such individuals should spend more time in the classroom providing practical management strategies (McGregor and Campbell, 2001). Teachers and others working on the front line may be apprehensive about their ability to acquire the necessary skills to implement ABA intervention techniques; however, studies in applied settings have shown that teachers and others can successfully acquire and implement with high integrity behaviour-analytic methods such as those of functional assessment (McClellan et al., in press; Moore et al., 2002; Mueller et al., 2003; Noell et al., 2000).

The cost of such training may be outweighed by the benefits in educational improvements for the child; improved quality of life for both the child and the caregivers; reduced care costs in later years; and improvement of the educational environment for teachers and fellow students (Maurice et al., 1996). This is evident in calculations of 'the cost of autism' which has been estimated at almost £3,000,000 over a lifetime for those with lower functioning but at less than a third of this for those with higher functioning (Knapp and Jarbrink, 2000). This increased cost is primarily due to the expense of residential support – an expense which may be offset by the use of ABA which can bring about an enhancement of communication, daily living and social skills.

As mainstream teachers are becoming progressively more responsible for the education, care and management of children with autism it is clear that guidance and skills training are an urgent prerequisite to their involvement. Indeed some evidence suggests that some refuse to participate in inclusion programmes when appropriate support and training are unavailable (McGregor and Campbell, 2001). One study found that an increase in

participation in such a programme from 33 to 86 percent was observed when adequate support and training were available (Myles and Simpson, 1989). The majority of teachers of children with autism gave priority to in-career training in the management of challenging behaviour (Kinsella, 2000). However, only two-thirds of teachers in this sample reported receiving training in devising behaviour support plans.

The most likely methods of delivery for teacher training include government supported in-service models and specific university training in ABA (Scheuermann et al., 2003). However, such courses may have to take account of the criteria outlined by the Behavior Analyst Certification Board® in respect of minimum educational, experiential and examination requirements to practise as either an associate behaviour analyst or a behaviour analyst (Shook et al., 2004). Currently, this is the only accrediting body for ABA practitioners and it is likely that the criteria outlined by the board will become the benchmark for what is considered adequate training and supervision requirements to use Applied Behaviour Analysis in clinical and educational settings.

The purpose of the current article is to evaluate a training programme in ABA. The Trinity College Dublin ABA training programme aims to facilitate students become proficient in the understanding and practical application of the basic principles of Applied Behaviour Analysis. The course is certified by the BACB to meet the educational, experiential and examination requirements for an associate board certified behaviour analyst. In addition to lectures and workshops all participants completed a functional assessment and developed a support plan for one child in their classroom. Each participant was assigned a supervisor who provided feedback and technical assistance around both assessment and intervention development and implementation. At the completion of the course changes in target behaviour were determined. As such, it is possible to determine the effectiveness of teacher developed and implemented behaviour support plans in special education settings. In addition, teachers evaluated the course along a number of key dimensions in a specially developed questionnaire. In respect of determining the social validity of interventions, parents also completed a questionnaire regarding perceived changes in their child as a result of the interventions put in place in the school context.

Method

Design

A single-case AB design was used in this study to determine the effectiveness of each support plan for each child. A specific target behaviour

was identified for each child and observational data for each child were collected across baseline (A) and intervention (B) phases. In baseline conditions, appropriate methods to determine frequency of the target behaviour were used and no interventions were put in place. During the intervention phase, frequency measures were continued and interventions were implemented.

Participants

A total of 11 female special needs teachers completed the training course and all course assignments. The course selection criteria required that all teachers had a general education degree or diploma, and also had prior experience in working with children with autism. In addition, several of the teachers had attended training workshops on autism in Ireland and the UK. However, none had completed a formal course in ABA prior to participation in the course. All worked in classes with children with autistic disorder. However, the size of these classes varied, with some teachers having no more than three children in a class while others had up to seven. Each teacher completed all course assignments (i.e. functional assessment and support plan) for one child with autism in their classroom.

Children

The criteria for child selection necessitated that each child was diagnosed with autistic disorder. Nine of the children were boys and three were girls. Their ages ranged from 2 years 10 months to 15 years (see Table 1). The mean age was 8 years 2 months. All children presented with a variety of difficulties. However, as part of the training process, one target behaviour

Table 1 Demographic characteristics of children with autism, target behaviours and intervention programme type

<i>Child</i>	<i>Gender</i>	<i>Age</i> <i>(years:months)</i>	<i>Target behaviour</i>	<i>Intervention goal</i>
1	Male	9:10	Hitting	Decrease behaviour
2	Male	8:1	Avoidance of task	Increase attention to task
3	Male	6:0	Shouting, throwing things	Decrease behaviour
4	Male	13:9	Verbal aggression	Decrease behaviour
5	Male	15:0	Question asking	Decrease behaviour
6	Male	10:7	Hitting	Decrease behaviour
7	Female	10:0	Non-compliance	Increase compliance
8	Female	2:10	Latency in response	Decrease delay
9	Female	3:6	Physical aggression	Decrease behaviour
10	Male	6:1	Inappropriate urinating	Decrease behaviour
11	Male	8:0	Prompt dependent communication	Increase tacting

(or in the case of a few individuals, a response class of behaviours) was selected for each child. As can be seen from Table 1, the primary target behaviour selected by teachers was challenging behaviour which was identified as in need of reduction. Five presented with physical or verbal aggression (hitting, screaming, shouting, throwing items, obscene language). Other target behaviours included: increasing the rate of correctly naming objects (tacting); increasing compliance with instructions; increasing correct toileting; increasing attention to task; decreasing a high rate of question asking; decreasing delay in responding; and increasing the rate of spontaneous vocalizations. The average duration of presenting problems was 10.2 months prior to teachers commencing the course.

Procedure

All teachers underwent 90 hours of classroom instruction and supervision which consisted of 45 hours addressing the basic principles of ABA, and 45 hours addressing the application of these principles in practical settings. The topics were selected to meet the criteria as identified by the Behavior Analysis Certification Board[®] (see Appendix 1). The course comprised 13 full days of instruction over a 7 month period. Central to the training was the use of Person Focused Training (McClellan et al., in press). Participants completed a comprehensive functional assessment which included details of the child's ecological background, schedule of daily activities, social interactions, functions, cognitive ability, health issues, and life story (see McClellan et al., in press). It also included an inventory of favourite things and a communication assessment (including receptive and expressive language ability). Based upon the results of the functional assessment, a behaviour support plan including environmental accommodations, skills training (general skills, functionally equivalent skills, coping and tolerance skills) and reactive strategies was developed. Real-time data were also collected through observational recording, and target behaviour specific assessments also took place (e.g. the Assessment of Spontaneous Vocalizations). Frequency of occurrence of the target behaviour was collected across baseline and intervention sessions in order to evaluate the effectiveness of individual support plans. Each teacher was assigned a supervisor who either was a board certified behaviour analyst or met the criteria for same. One hour of supervision was available per week per teacher.

Social validity evaluation instruments

A teacher interview was constructed in order to ascertain teacher experiences of the course. It was composed of 12 questions, in Likert and open-ended format, which assessed: the quality of various aspects of the programme, the organization of the course, the perceived benefits which teachers received

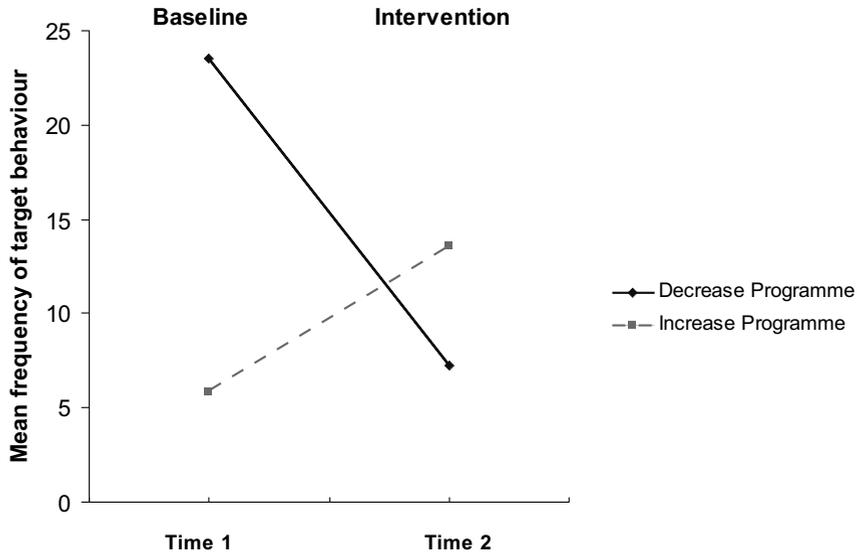


Figure 1 The mean frequency of target behaviour occurrence for baseline and intervention sessions

from the course, and the areas in which the course could be improved (see Appendix 2). A parent interview was also developed to determine parents' perceptions of the effects of the teacher's intervention plan. It consisted of 17 questions, in a Likert and yes/no format, and assessed: parents' level of awareness of their child's participation in the course, parental beliefs regarding the use of ABA and other educational interventions, and parental perceptions of the effects of ABA on their child (see Appendix 3).

Results

The primary goal of the support plan for eight children was a reduction in target behaviours. For the remaining three children an increase in target behaviours was the goal of the support plan. The number of baseline sessions conducted for each child ranged from three to 23 and averaged 11.5 (SD = 7.4). The number of intervention sessions which followed ranged from three to 27 and averaged 12 (SD = 9.3) sessions. For the eight reduction programmes the frequency of occurrence of the target behaviours ranged from 2.9 to 54 at baseline, and averaged 23.5 (SD = 19.8) occurrences. At intervention the frequency of the target behaviours for the decrease programmes ranged from 0.6 to 26.7 and averaged 7.2 (SD = 9.2) (see Figure 1). The mean rate of behaviour was calculated for baseline and intervention conditions for each child. Differences across the group were

Table 2 The percentage change from baseline in the expected direction of the frequency of occurrence of the target behaviour

Child number	1	2*	3	4	5	6	7*	8	9	10	11*
% change in expected direction	-49	196	-26	-89	-31	-69	21	-91	-93	-83	126

*These are increase programmes.

then calculated between baseline and intervention. A Wilcoxon signed ranks test found that there was a significant reduction in the rate of target behaviour ($Z = -2.521$, $p < 0.05$).

For the three increase programmes the frequency of the target behaviours ranged from 1.4 to 11 at baseline and averaged 5.8 (SD = 4.8) occurrences. At intervention the frequency of these target behaviours ranged from 1.7 to 24.3 and averaged 13.6 (SD = 11.3) occurrences (see Figure 1). Owing to the same number in the increase programme group it was not possible to conduct any statistical tests.

A second method of analysis used to determine the overall effect of teacher designed and implemented support plans was the percentage change of behaviour occurrence from baseline in the expected direction, a method used in previous studies (Campbell, 2001). Table 2 shows the percentage change in the frequency of occurrence of target behaviours displayed by 11 children with autism. The figure shows that all 11 children showed a change in the expected direction. The mean change in the expected direction for the 11 children was 79.5 percent (SD = 50.8). For the reduction programmes an average change of 66.4 percent (SD = 27.5) was observed, and for the increase programmes an average change of 114.3 percent (SD = 88) was observed.

Teacher questionnaires

The teachers of the 11 children completed a 12 question course evaluation questionnaire. The Likert questions were rated on a scale from 1 to 5, where 1 was 'less than expected' and 5 was 'greater than expected'. Teachers agreed that the quality of the training programme was greater than they expected (mean = 3.5, SD = 1.7). They found especially that the quality of the lectures was very high (mean = 4.5, SD = 0.6), and that the clarity of the teaching sessions was equally high (mean = 4.5, SD = 0.7). Teachers also agreed that the training they received would affect their professional practice (mean = 4.7, SD = 0.5), and that future students would benefit (mean = 4.6, SD = 0.5). They also believed that their knowledge of ABA had expanded significantly (mean = 4.8, SD = 0.4). However, teachers were unsure if the number of supervision sessions was enough (mean =

2.8, $SD = 1.6$) or if they were prepared to take the ABCBA exam (mean = 3.2, $SD = 0.9$).

Qualitative data

Analysis of the themes which emerged from the two open-ended questions on the questionnaire indicated that the teachers felt they had learned a great deal about ABA: 'I now know how to do an assessment – what to look for and how to record.' They claimed to have become familiar with the language of ABA and that they now knew the meaning and basis of ABA terminology: 'I've learnt a new language, the language of ABA.' They also stated that they had a greater appreciation of what ABA involves, and how to conduct functional assessments and write up behaviour support plans. Teachers felt that their skills had improved and that they now possessed a repertoire of varied data collection and interpretation tools: 'I now know many different strategies for dealing with undesired behaviour.'

Teachers also felt that they had learned the value of applying ABA methodology in practice. They felt that ABA principles were relevant to many aspects of their teaching, and that looking for the function of behaviour is most important. Teachers reported that the use of functional analysis is highly beneficial and believed that systematic instruction could really affect change, thus empowering teachers to face challenging behaviour: 'I now know that all behaviour has meaning and is an attempt to communicate something.' They were also aware of the importance of data collection in implementing and monitoring change: 'I now realize the importance of accurate record keeping.' Teachers also pointed out the need for specialist training and remarked that it is possible to incorporate ABA into any classroom practice. Teachers enjoyed the course and described it in very positive language: 'The lectures were very clear and presented with consideration of the need to discuss issues which was brilliant.'

Teachers felt that it was difficult to take in the amount of course material in the time allocated for study. They advised extending the length of the course and including more revision sessions and tutorial support. They recommended that academic aspects of behaviour be incorporated with literature on challenging behaviour, and also advised that more supervision and feedback would be useful. Teachers also recommended that the course involve a year of mentoring after the formal completion of the course to consolidate and implement the knowledge acquired, thus giving the teacher confidence to implement ABA independently in the classroom.

Parent questionnaires

At least one parent of seven of the 11 children completed the parent evaluation questionnaire. All parents were aware that their child was attending

the course and were pleased that the child's teacher was taking the course. All seven parents noticed a beneficial change in their child's behaviour since the respective teachers began using ABA methods with their child. They all believed that teachers of those with an ASD should know how to use the principles of ABA, and believed that implementing these methods in the classroom is highly feasible. All parents expressed the opinion that teachers should be well versed in a variety of approaches. Only two parents believed that teachers should use only one method, and only one of these believed that ABA should be that method. However, six of seven parents believed that ABA should be the main method used in the classroom. Five of seven would like their child to have a more structured approach to their learning.

Likert scale questions

Parents reported being in favour of ABA methods being used with their children (mean = 3.6, SD = 0.8, range 1 strongly agree to 5 strongly disagree) and were definitely happier with the classroom now than before the teacher attended the course (mean = 4.6, SD = 0.5). Parents agreed that teaching procedures and goals should be based on data collected on the child's performance (mean = 3.8, SD = 0.4). Parents indicated they would also like to know more about ABA (mean = 3.7, SD = 0.8).

Discussion

The purpose of this study was to evaluate a training programme in ABA by assessing the effectiveness of teacher designed and implemented behavioural support plans containing multi-element interventions. In addition, the course was evaluated by reviewing parents' perceptions of the effects of the teachers' intervention plans, and teachers' perceptions of the course. It is first notable that all teachers were successful in conducting a functional assessment and using this to design an effective behavioural support plan with appropriate supervision.

Teacher designed support plans were successful and resulted in an average change of 80 percent in the expected direction across the target behaviours (i.e. either increases or decreases). The percentage reduction for decreasing target behaviours was 66.4 percent. At a practical level this means that such problematic behaviours as swearing, shouting, striking others, urinating outside the bathroom, and throwing objects all occurred on average at only a third of their original frequency. Such a reduction undoubtedly has positive implications in terms of increased educational opportunities and improving the quality of life for the teacher, the student in question, his/her parents, and his/her classroom peers. Equally substantial gains were observed with the three children with support plans

targeting increases in specific behaviours. Two children had increases of 196 percent and 126 percent in increased attention to task and tacting (object naming) respectively. However, the small number in this group meant that statistical analysis was not possible.

Campbell (2001) in his quantitative review of 117 articles assessing the effectiveness of behavioural treatments in reducing problem behaviours found that these interventions implemented largely by professionals reduced the frequency of problem behaviours by 76 percent. The closely comparable effectiveness of the teacher implemented interventions can perhaps be attributed to the substantial amount of multifaceted instruction in both the basic principles of ABA and the use of these principles in a practical setting, of which the course under evaluation was composed.

This comparability demonstrates that teachers can effectively develop and implement behavioral interventions, and may offset the common perception of teachers that such interventions are too time-consuming, comprehensive and complicated for their implementation in a special needs classroom. It supports the literature concerning both the effectiveness of ABA in reducing challenging behaviour and the efficacy of ABA in teaching new skills in improving communication, compliance and daily living skills (Campbell, 2001; Matson et al., 1996).

The potential benefits of training in ABA are considerable when one takes into account the possibility that the behavioural assessment may be conducted by the teacher rather than a consultant behaviour analyst. Such a situation may help eliminate the current dissatisfaction with the consultancy model felt by many teachers and also empower teachers to tackle problem behaviours and teach new skills (McGregor and Campbell, 2001). With sufficient training it may also be possible that the quality of the assessment may be improved due to the increased familiarity the teacher has with the child in question. Thus teacher designed and implemented programmes can be thought of as 'strengthening the link between assessment and intervention' (Watson et al., 1999). It is for these reasons that the current study can be thought of as both effective and ecologically valid.

ABA training is beneficial in that it teaches teachers that the essential consideration when devising a behaviour support plan is the function of the behaviour(s) in question. For instance 'punishing' a child for physical aggression on initiation of a maths lesson by using time-out or restraint may in fact reinforce that behaviour if its function is task avoidance (Watson et al., 1999). It is the concentration on issues of function such as this combined with the methodological rigour and experimental design of ABA interventions that makes them more effective than traditional classroom methods (Gresham et al., 2004).

In general teachers found that the quality of the course was greater than

they had expected, and felt they had been successfully educated in the language and strategies of ABA (e.g. functional assessment and the development of function-based behaviour support plans) and had acquired a variety of new skills which would have a beneficial influence on their daily teaching practices. The teachers in general had a positive experience of the course and their interactions with lecturers and supervisors. Some did have difficulty assimilating the bulk of literature associated with the course in its 7 month duration. Teachers' slight dissatisfaction with the number of supervision sessions which took place throughout the course is perhaps a reflection of the importance they placed on supervision.

Parents observed a marked beneficial change in their child's behaviour as a result of the course and were much happier that ABA had been incorporated into their child's classroom, supporting previous results reported by Dillenburger et al. (2004). In general they held positive beliefs regarding ABA and felt that data-based interventions were essential in the classroom. Parents believed that teachers should be competent in a number of educational approaches and the majority believed that ABA should be the main approach used, but not the only one. The majority of parents also expressed interest in increasing their own knowledge of the methods of ABA.

There are of course a number of limitations to the present study. Foremost is the absence of a control group. Despite the use of a methodology used in previous investigations of single-case data (i.e. Campbell, 2001) it is not possible to rule out changes in target behaviours over time due to extraneous factors such as passage of time. However, recent research suggests that challenging behaviours in individuals with autism such as wandering, destructiveness, tempers, aggressiveness, noisiness, hyperactivity, uncooperativeness, and difficult public behaviour change little over time (Murphy et al., in press). Consequently, at least for the support plans that focused on challenging behaviours, it is unlikely that the changes observed over the relatively short duration of the study could be attributed to natural changes over time. Second, it was not possible to determine whether or not the behavioural changes noted were maintained as no subsequent follow-up was conducted, and it is not known if the relevant interventions were continued by the teachers. In light of the positivity of teachers this may be unlikely. Specific methodological limitations include the absence of inter-rater reliability measures at both baseline and intervention conditions. Furthermore, it was not possible to determine whether classroom size and additional supports such as special needs assistants were related to better outcomes in students in those classrooms. Future research may address these deficits.

It was also not possible to determine the extent to which teachers could transfer knowledge of ABA to other children with other difficulties. While

the course provided participants with the basic requirements for the board certified associate behaviour analyst, the extent to which this is sufficient for independent practice is important to address. The board does state that continued supervision is important prior to independent practice. No provision for formal additional supervision was possible with the existing course owing to budgeting constraints, but all participants were advised to seek ongoing supervision from an individual with full board certification or who meets the criteria for same. The current research could also have been strengthened by asking the teachers what they felt the most important ingredients of their learning was. It is likely that the regular supervision by either board certified behaviour analysts or individuals who met the criteria for same would rank highly in their reports, though this remains to be explored.

In conclusion, results from this study suggest that with adequate training and supervision teachers can successfully conduct behavioural assessments and implement behaviour support plans and consequentially reduce the prevalence of problem behaviours and improve key skill areas for children with an autistic disorder. The improvements observed in this study were clearly noticeable to the children's parents and they held a more positive attitude towards their child's school situation after the programme implementation. Teachers found that the course was highly beneficial in improving their range of skills and felt that the skills they acquired would benefit the quality of their future teaching of those with autism. However, in order to ensure that these skills are maintained and generalized, and that the benefits of behavioural support are preserved, it is perhaps necessary to extend the quality and quantity of supervision and teacher support beyond that currently provided by the course under evaluation.

Appendix 1: ABA course content

- 1 Introduction to Applied Behaviour Analysis and objectives of this course. History of Applied Behaviour Analysis, including its place within psychology, education and developmental disabilities
- 2 Ethics and characteristics of Applied Behaviour Analysis
- 3 Basic behavioural principles
- 4 Descriptive analysis: introduction to analysis, planning and directing
- 5 Functional analysis
- 6 Measuring and recording behaviour
- 7 Data display: production and interpretation of graphs
- 8 Data display and interpretation II
- 9 Selecting and defining target behaviours and change procedures
- 10 Operant reinforcement

- 11 Schedules of reinforcement and stimulus control
- 12 Shaping
- 13 Imitation and chaining
- 14 Decreasing behaviour and extinction
- 15 Positive punishment and overcorrection
- 16 Negative punishment/time-out and response cost
- 17 Contingency contracting and token economies
- 18 Group contingencies, self-management and rule-governed behaviour
- 19 Promoting generalization and managing emergencies
- 20 Treatment designs
- 21 Transfer of technology, communicating behaviour change efforts, and evaluating research
- 22 Behaviour plan presentations
- 23 Review for final exam

Appendix 2: teacher evaluation

For each of 1–11, please circle one number.

- 1 Please rate the overall quality of the training programme:

Less than expected	1	2	3	4	5	Greater than expected
--------------------	---	---	---	---	---	-----------------------
- 2 The overall quality of the lectures I received was:

Less than expected	1	2	3	4	5	Greater than expected
--------------------	---	---	---	---	---	-----------------------
- 3 The training I received will affect my teaching and professional practice:

Less than expected	1	2	3	4	5	Greater than expected
--------------------	---	---	---	---	---	-----------------------
- 4 The contribution of the case study component to the overall quality of training was:

Less than expected	1	2	3	4	5	Greater than expected
--------------------	---	---	---	---	---	-----------------------
- 5 As a result of the work in this course, I believe my future/other students will benefit:

Less than expected	1	2	3	4	5	Greater than expected
--------------------	---	---	---	---	---	-----------------------
- 6 The time/money invested in this course by myself or the department of education was justified:

Less than expected	1	2	3	4	5	Greater than expected
--------------------	---	---	---	---	---	-----------------------

- 7 The contribution of hearing other cases to the overall quality of training was:
Less than expected 1 2 3 4 5 Greater than expected
- 8 The quality of the supervision I received was:
Less than expected 1 2 3 4 5 Greater than expected
- 9 The number of the supervision sessions I received was:
Less than expected 1 2 3 4 5 Greater than expected
- 10 This course expanded my understanding of Applied Behaviour Analysis:
Less than expected 1 2 3 4 5 Greater than expected
- 11 I feel this course has prepared me for taking the ABCBA exam:
Less than expected 1 2 3 4 5 Greater than expected
- 12 The three most useful things I learned during the course were:

- (a) _____
- (b) _____
- (c) _____

13 What were the three worst features of the course that could be improved?

- (a) _____
- (b) _____
- (c) _____

Overall comments and impressions:

Appendix 3: parental questionnaire

Child's age:	Respondent (circle):	Father	Mother	
Please circle your response to each of statements 1–12:				
1	I was aware that my child's teacher was attending this course.	Yes	No	
2	I was aware that my child was targeted for their teacher's academic assignment (behaviour support plan) on this course.	Yes	No	
3	I was pleased to learn that the teacher was attending this course.	Yes	No	
4	I believe that teachers of students with an autistic spectrum condition should know and use the principles of Applied Behaviour Analysis (ABA).	Yes	No	
5	I believe that ABA should be the primary method of educating students with an ASD.	Yes	No	
6	I believe that teachers should be well versed in a variety of approaches to teaching children with an ASD.	Yes	No	
7	I believe that teachers can incorporate ABA methods into their teaching along with those such as TEACCH, PECS etc.	Yes	No	
8	I would prefer if the teacher followed one method exclusively in teaching my child.	Yes	No	
9	I would prefer that teachers of students with an ASD follow the ABA approach exclusively.	Yes	No	
10	I noticed a change in the way in which the teacher was working with my child since Christmas (based on ABA).	Yes	No	
11	I believe this change was beneficial to my child.	Yes	No	N / A
12	I would like my child to have a more structured approach to his/her learning.	Yes	No	

Items 13–17 should be given a score from 1 to 5 according to the following scale:

1	2	3	4	5
Strongly disagree	Disagree	Don't care	Agree	Strongly agree

(insert number below)

- 13 I would like changes in teaching procedures and goals to be based on data collected on my child's performance by the teacher. _____
- 14 I was happier with the classroom before the teacher attended the ABA course. _____
- 15 I would like to know more about ABA procedures myself. _____
- 16 I am against ABA being used with my child. _____
- 17 The attitude of my child's teacher to ABA has become more positive since Christmas. _____

Please enter below any comments you would like to add:

I agree to my anonymous comments being considered for public dissemination (circle):

Yes No

Thank you for participating in this survey!!!!

References

CAMPBELL, J. M. (2001) 'Efficacy of Behavioral Interventions for Reducing Problem Behavior in Persons with Autism: A Quantitative Synthesis of Single-Subject Research', *Research in Developmental Disabilities* 24: 120–38.

DEPARTMENT OF EDUCATION & SCIENCE (2001) *The Report of the Task Force on Autism*. Dublin: Stationery Office.

DILLENBURGER, K., KEENAN, M., GALLAGHER, S. & MCELHINNEY, M. (2004) 'Parent Education and Home-Based Behaviour Analytic Intervention: An Examination of Parents' Perceptions of Outcome', *Journal of Intellectual and Developmental Disability* 29 (2): 119–30.

EIKESETH, S., SMITH, T., JAHR, E. & ELDEVIK, S. (2002) 'Intensive Behavioural Treatment at School for 4 to 7 Year Old Children with Autism: A One Year Comparison Controlled Study', *Behaviour Modification* 26 (1): 49–68.

GREEN, G. (2001) 'Behavior Analytic Instruction for Learners with Autism: Advances in Stimulus Control Technology', *Focus on Autism & Other Developmental Disabilities* 16 (2): 72.

GRESHAM, F. M., MCINTYRE, L. L., OLSON-TINKER, H., DOLSTRA, L., MCLAUGHLIN, V. & VAN, M. (2004) 'Relevance of Functional Behavioral Assessment Research for School-Based Interventions and Positive Behavioral Support', *Research in Developmental Disabilities* 25: 19–37.

- HOWARD, J. S., SPARKMAN, C. R., COHEN, H. G., GREEN, G. & STAINSLAW, H. (in press) 'A Comparison of Intensive Behaviour Analytic and Eclectic Treatments for Young Children with Autism', *Research in Developmental Disabilities*.
- KINSELLA, W. P. (2000) 'A Comparative Analysis of Educational Provision for Pupils with Autism in Northern Ireland and the Republic of Ireland', unpublished master's thesis, Education Department, University College Dublin.
- KNAPP, M. & JARBRINK, K. (2000) *The Cost of Autistic Spectrum Disorder*. London: Mental Health Foundation.
- LOVAAS, O. I. (1987) 'Behavioral Treatment and Normal Educational and Intellectual Functioning in Young Autistic Children', *Journal of Consulting and Clinical Psychology* 55: 3-9.
- MATSON, J. L., BENAVIDEZ, D. A., COMPTON, L. S., PALAWSKYJ, T. & BAGLIO, C. (1996) 'Behavioral Treatment of Autistic Persons: A Review of Research from 1980 to the Present', *Research in Developmental Disabilities* 6: 433-65.
- MAURICE, C., GREEN, G. & LUCE, S. (1996) *Behavioral Intervention for Young Children with Autism*. Austin, TX: Pro-Ed.
- MCCLEAN, B., DENCH, J., GREY, I., HENDLER, J., SHANRAHAN, S., FITZSIMONS, E. & CORRIGAN, M. (in press) 'Outcomes of Person Focused Training: A Model for Delivering Behavioural Supports to Individuals with Challenging Behaviours', *Journal of Intellectual Disability Research*.
- MCEACHIN, J. J., SMITH, T. R. & LOVAAS, O. I. (1993) 'Long-Term Outcome for Children with Autism Who Received Early Intensive Behavioral Interventions', *American Journal of Mental Retardation* 97: 359-72.
- MCGREGOR, E. & CAMPBELL, E. (2001) 'The Attitudes of Teachers in Scotland to the Integration of Children with Autism into Mainstream Schools', *Autism* 5 (2): 189-207.
- MOORE, J. W., EDWARDS, R. P., STERLING-TURNER, H. E., RILEY, J., DUBARD, M. & MCGEORGE, A. (2002) 'Teacher Acquisition of Functional Analysis Methodology', *Journal of Applied Behavior Analysis* 35: 73-7.
- MUELLER, M. M., EDWARDS, R. P. & TRAHANT, D. (2003) 'Translating Multiple Assessment Techniques into an Intervention Selection Model for Classrooms', *Journal of Applied Behavior Analysis* 36: 563-73.
- MURPHY, G., BEADLE-BROWN, J., WING, L., GOULD, J., SHAH, A. & HOLMES, N. (in press) 'Chronicity of Challenging Behaviours in People with Severe Intellectual Disabilities and/or Autism: A Total Population Sample'.
- MYLES, B. S. & SIMPSON, R. L. (1989) 'Regular Educators' Modification Preferences for Mainstreaming Mildly Handicapped Children', *The Journal of Special Education* 22 (4): 479-89.
- NOELL, G. H., WITT, J. C., LAFLEUR, L. H., MORTENSON, B. P., RANIER, D. D. & LEVELLE, J. (2000) 'Increasing Intervention Implementation in General Education Following Consultation: A Comparison of Two Follow-Up Strategies', *Journal of Applied Behavior Analysis* 33: 271-84.
- ROBERTSON, K., CHAMBERLAIN, B. & KASARI, C. (2003) 'General Education Teachers' Relationship with Included Students with Autism', *Journal of Autism and Developmental Disorders* 33 (2): 123-30.
- SCHEUERMANN, B., WEBBER, J., BOUTOT, E. A. & GOODWIN, M. (2003) 'Problems with Personnel Preparation in Autism Spectrum Disorders', *Focus on Autism & Other Developmental Disabilities* 18: 197-207.
- SHOOK, G. L., JOHNSTON, J. M. & MELLICHAMP, F. (2004) 'Determining Essential

Content for Applied Behavior Analyst Practitioners', *The Behavior Analyst* 27 (1): 67-94.

SMITH, T. (1999) 'Outcome of Early Intervention for Children with Autism', *Clinical Psychology: Science and Practice* 6: 33-49.

WATSON, T. S., RAY, K. P., TURNER, H. S., & LOGAN, P. (1999) 'Teacher Implemented Functional Analysis and Treatment: A Method for Linking Assessment to Intervention', *School Psychology Review* 28 (2): 292-302.

Correspondence should be addressed to:

IAN M. GREY, PhD DClInPsych BCBA, Senior Clinical Psychologist, KARE, Co. Kildare, and Lecturer in Developmental Disabilities, Department of Psychology and National Institute for the Study of Learning Difficulties, Trinity College Dublin, Ireland. e-mail: igrey@tcd.ie

Date accepted 30/03/05