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The use of Functional Behavioural Assessment for students with challenging behaviours: Current patterns and experience of Australian practitioners.

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ABSTRACT

With the growing adoption of the Positive Behaviour Support (PBS) system state-wide in New South Wales, Australia, it was of interest to determine the readiness of behaviour specialists to conduct Functional Behaviour Assessments (FBA) as part of the third tier of School-wide PBS provision. This article presents the findings from a survey conducted with 86 behaviour specialists employed by NSW DET in metropolitan Sydney. Seventy four participants (86%) reported some form of training in FBA, 85 (99%) had used indirect assessments, all reported using direct assessment methods, and, 40 (46.5%) had written a FBA based behaviour intervention plan (BIP). Suggestions for priority training and preferred delivery options are outlined.

Key words: behaviour specialists, behaviour intervention planning, functional behaviour assessment, training and development

INTRODUCTION

Students with disabilities are increasingly enrolled in mainstream classrooms in many countries including Australia, under the policy of inclusion (Ashman & Elkins, 2004; Forlin, Keen & Barrett, 2008). Students with disabilities exhibiting challenging behaviours are reported to present the greatest challenge to educators in their attempts to provide education in the least restrictive environment (Maag & Katsiyannis, 2006; Kamps, Wendland, & Culpepper, 2006; Sugai et al., 2000; Webb, Greco, Sloper, & Beecham, 2008). Westwood and Graham (2003) reported that students diagnosed with emotional and behavioural disorders (E/BD) are the most challenging students with disabilities in mainstream classrooms. The general prevalence of E/BD in public schools is estimated to be 3 to 10% of the population (Beaman, Wheldall, & Kemp, 2007). A general educator can thus expect at least one student diagnosed with E/BD to be enrolled in their class.

Teachers of students with problem behaviour are likely to require effective interventions based on validated assessment processes. One empirically supported method of assessment is functional behavioural assessment (FBA). All human behaviour serves a purpose or function (Barnhill, 2005). The use of FBA enables the relationship between behaviour, its antecedents, and the controlling

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consequences to be clarified (Gresham, 2003). FBA is not a new method, having a 30 year history arising from applied behaviour analysis (ABA) and the application of the principles of reinforcement and stimulus control (Alberto & Troutman, 2009; Barnhill, 2005). In the last decade, FBA has become a federally mandated process in the USA under the Individuals with Disabilities Education Act (IDEA) (1997, 2004).

FBA is the preferred assessment method in Positive Behaviour Support (PBS) for students requiring intensive individual intervention for problem behaviour (see Sugai et al., 2000). School-wide PBS is a triadic behaviour support model that is designed to promote appropriate student behaviour in school settings (Bambara & Kern, 2005). The model has three tiers of intervention; universal or primary, which includes whole school policies and procedures to promote appropriate behaviour, secondary interventions which can include targeted interventions such as small group social skills instruction for students for whom universal interventions have been unsuccessful, and tertiary level interventions which involve conducting a FBA to inform individualised support for the most challenging student behaviours where universal and secondary tier interventions have been unsuccessful (Sugai et al., 2000).

The use of FBA leads to more technically sound behavioural interventions as it links the underlying cause of the behaviour in its contextual environment to the intervention strategies selected (O'Neill et al., 1997). A growing body of literature on the FBA process now exists to guide practitioners (see Alberto & Troutman, 2009; Bambara & Kern, 2005; CECP, 2001; Crone & Horner, 2003; Kerr & Nelson, 2006; O'Neill et al., 1997; Watson & Steege, 2003). To assist the inclusion process of students with challenging behaviours, general educators will need access to behaviour specialists who are trained in writing FBA based behaviour intervention plans (BIPs).

The use of FBA typically involves the use of both indirect assessment methods such as interviews, rating scales, and, direct observations (O'Neill et al., 1997). When reviewed, the results of these assessment methods can show trends or patterns of behaviour, clarifying which events are triggers for problem behaviour or consequences that maintain the behaviour. These hypothesised triggers or maintaining consequences should then be tested via experimental manipulations to confirm contextual relationships (Sasso, Conroy, Stichter, & Fox, 2001). Without experimental manipulation, the assessment is at best descriptive (Watson, Ray, Sterling-Turner, & Logan, 1999), and cannot confirm causal relationships between suggested maintaining variables and observed behaviours (Doggett, Edwards, Moore, Tingstrom, & Wilczynski, 2001). The most common form of experimental manipulation involves a reversal design where interventions are applied and withdrawn to verify the intervention effects (Alberto & Troutman, 2009).

Based on the data collected and analysed from the FBA, a behavioural intervention plan (BIP) is written. A BIP includes strategies that reduce or eliminate environmental triggers, teach appropriate skills, and arrange environmental consequences to increase the use of appropriate behaviours, and reduce inappropriate behaviours (Chandler, Dahlquist, Repp, & Feltz, 1999; Ingram, Lewis-Palmer, & Sugai, 2005). Once implemented, these plans need to be evaluated to determine their effectiveness and ongoing contextual fit (Lane, Barton-Arwood, Spencer, & Kalberg, 2007).

FBA was originally developed to assess problem behaviour in people with severe intellectual disability and has since been extended to people without intellectual disability. Although some concerns have been raised about the use of FBA in regular school settings (see Gresham, 2003; Reid & Nelson, 2002; Sasso et al., 2001), there appears to be sufficient research evidence to show that FBA based behavioural interventions can be effective in reducing challenging behaviours in regular school settings (Ervin, Kern, Clarke, Dunlap, & Friman, 2000; Heckaman, Conroy, Fox & Chait, 2000; Kern, Hilt, & Gresham, 2004); Lane, Umbreit, & Beebe-Frankenberger, 1999; Reid & Nelson, 2002; Sasso et al., 2001). FBA is considered to be a respectful, person-centred approach, that inform BIPs which aim to enhance an individual's adaptive functioning in their current school context via skill development and replacement (Bambara & Kern, 2005). The intervention strategies are matched to perceived function rather than the topography of the behaviour (Ingram et al., 2005). Such plans can reduce the need for students to be removed to more restrictive school environments (Benazzi, Horner, & Good, 2006). The process advocates a data-driven team-based problem-solving approach, that includes individuals who have contextual knowledge of the student, and an understanding of behavioural theory (Benazzi et al., 2006).

The usefulness of FBA has been recognised in the USA, and has become a federally mandated requirement under IDEA when a student's behaviour has resulted in a change of placement, including a suspension of more than 10 days, where no current behaviour intervention plan existed (Van Acker, Boreson, Gable, & Potterton, 2005)In Australia, there is no legal requirement to conduct FBA, but it is seen as a valuable process (Conway, 2006). In the state of New South Wales (NSW), Australia, five of the ten educational regions responsible for the education of over 400,000 students (55% of the state's students) had implemented the first tier of the School-wide Positive Behaviour Support (PBS) (http://.pbis.org) framework by late 2007. An additional three regions (29% of the state's students) are in the early stages of implementation. As FBA is the central component in the third tier of PBS, for individualised support (Sugai et al., 2000), its use is likely to become more commonplace as the implementation of PBS moves beyond the first tier.

The Individuals with Disability Education Act (1997) appears to have lead to widespread training in FBA in the USA, however, a number of challenges have also been reported including providing high-quality training to different audiences and finding the time and people to build capacity in implementing and monitoring FBA (Conroy, Katsiyannis, Clark, Gable and Fox, 2002). In the USA, Conroy et al. (2002) reported the response of 37 states to the IDEA (1997) legislation regarding implementation and training in FBA. Conroy and her colleagues found that 95% of states surveyed indicated state-wide training had occurred: the majority of those who attended training were special educators and school psychologists compared to general educators.

In NSW a different pattern of uptake and use of FBA may be expected based on its role within PBS, and its value as a useful assessment strategy, rather than as a mandated process. In NSW, services to students with challenging behaviours are typically provided by an itinerant support teacher behaviour (ISTB) or an Autism Outreach Teacher (AOT), who is responsible for the service of a cluster of schools. It is likely that in-depth knowledge of FBA processes and training may remain limited to behaviour specialists and school counsellors in the foreseeable future. A consultative model is likely to remain as the primary form of service delivery. In the USA, fewer than half of the states that responded to a nationwide survey required those conducting FBA to hold a degree or a minimum level of training in FBA (Conroy et al, 2002). In NSW, no specific minimum training requirements currently exist for ISTBs or AOTs who carry out FBA.

Some survey research exists which has attempted to evaluate the use of FBA practices and attitudes, as well as future training and development needs for educators, psychologists, administrators, and, researchers in the USA (Desrochers, Hile, Williams-Moseley, 1997; Nelson, Roberts, Rutherford, Mathur, & Aaroe, 1999; Pindiprolu et al., 2007; Scott, Meers & Nelson, 2000). To date, no published data exists for FBA practitioners in Australia on teachers' attitudes to and use of FBA-based interventions in mainstream classrooms.

As FBA is likely to be required increasingly in NSW, in particular for third tier intervention of PBS programs, it was of interest to determine the source, amount, and recency of FBA training that NSW ISTBs and AOTs had received, and the extent of existing use of FBA processes. The specific questions addressed were: (a)H Have more recent graduates from either generalist or special education post-graduate teacher education programs received more training in FBA at the tertiary level? (b) What common processes in FBA are ISTBs and AOTs already using and how often? (c) Are ISTBs and AOTs writing behavioural intervention plans based on FBA? (d) Have the source or amount of training in FBA resulted in more FBA based behaviour intervention plans? (e) For some of the common FBA instruments, where has the most useful training occurred? (f) Are ISTBs and AOTs interested in additional training and development in FBA processes, and how do they want training delivered?

METHOD

Participants

Participants were recruited from three of the four educational regions in the Sydney metropolitan area. The educational regions are geographically large (all in excess of 600km^2). Typically, more than 100 primary schools, and more than 35 secondary schools are located in each region. The vast area these three educational regions service provides education to almost 500,000 students aged from 5 – 18 years (NSW DET, 2007).

The state education department that provides education to these schools is one of the largest education authorities in the world (Conway, 2006), and employs over 90 behaviour specialists in 18 teams, in the three participating regions. All behaviour specialists (ISTBs and AOTs) are qualified teachers, however, post-graduate qualifications in special education are not mandatory. In NSW, ISTBs and AOTS ideally have post-graduate qualifications in special education, however, non-accredited experience in teaching students with behaviour difficulties for a minimum period of two years is considered sufficient to meet the basic requirements for this position. Each region has at least three teams of ISTBs comprised of at least five behaviour specialist and at least two AOTs.

All 92 behaviour specialists in the three participating regions were invited to complete the survey questionnaire used in the study. The behaviour specialists in this study support classroom teachers and other relevant school personnel in the design and implementation of behaviour intervention plans for students identified as having disruptive behaviours (New South Wales Department of Education and Training [NSW DET], 2006). The form of support is individualised to meet the specific needs of the teacher and the student and may include consultation, collaboration, or whole-school training and development, in a variety of remedial and proactive behavioural topics. Students in need of behavioural support are referred by their teachers or the school's learning support team to the behaviour specialist service. Most behaviour specialist positions are itinerant in nature, and support is provided for a period of approximately 20 weeks (2 school terms), per case. ISTBs can support approximately 12 cases and AOTs approximately 6 that may be at different stages of intervention.

Materials

A 32 item questionnaire composed of six sections was developed for the collection of data. The survey questionnaire was designed after reviewing current key literature on FBA processes, procedures and strategies such as CECP (2001), Kerr and Nelson (2006), Crone and Horner (2003), O'Neill et al., (1997), and Watson and Steege (2003). The survey questionnaire was reviewed by two independent experts in FBA- based BIP planning who made a number of minor suggestions regarding item construction to aid clarity. To ensure questionnaire clarity, adequacy, and to increase validity, it was piloted with a small group of six special educators who were experienced in carrying out FBA and other related intervention designs. They were employed in positions similar to the intended participants, but in a non-participating region. Their feedback was sought on issues of commission and omission (Gay, Mills, & Airasian, 2006). These teachers were asked to review the survey questionnaire for clarity and to suggest other assessment strategies that had not been included. Based on their feedback, a small number of revisions were made prior to its final distribution, such as including visual examples of the measurement instruments and scales to avoid false positives, and rewording some items for enhanced clarity. These teachers reviewed the recommended changes and recommended it for use in the present study. A complete copy of the survey questionnaire is available from the first author, or an abridged version is provided in the appendix.

Questions were forced-choice items (Wiersma & Jurs, 2005). The survey took approximately 15 minutes to complete. The first two sections collected information concerning participants' employment tenure and tertiary qualifications and their prior training in FBA. The remaining sections collected data on the assessment methods used (indirect and direct), behaviour intervention planning, and interest in future training in FBA. In Section 3, teachers were asked to indicate the frequency of use (never, rarely, sometimes, regularly) of a variety of indirect assessment methods: functional assessment interviews (O'Neill et al, 1997; Watson & Steege, 2003); behavioural rating scales such as Durand's Motivational Assessment Scale (Durand, 1990); and the Problem Behaviour Questionnaire (CECP, 2001). Section 4 contained items about the use of direct assessment methods: anecdotal reports, A-B-C recording (Bijou, Peterson, & Ault, 1968), scatterplot (Touchette, MacDonald, & Langer, 1985), frequency and duration recording, interval recording (Alberto & Troutman, 2009), and the Functional Assessment Observation Form (FAOF) (O'Neill et al., 1997). Data collection methods such as anecdotal reports, frequency, and duration recording were included in the survey as they are common data collection systems (not confined to FBA) that participants may have used.

Questions on behavioural intervention planning practices in Section 5 were forced choice and included; writing a formal hypothesis statement after data had been collected and analysed, hypothesis testing using experimental manipulations / structured observations (eg. reversal designs

ABAB), the use of multiple forms of data to inform hypotheses, and writing BIPs after completing all the processes above. The final section on future training requirements utilised a three point Likert-type scale to gauge respondents' interest in additional learning about data collection methods, hypothesis formation and testing methods, and about writing BIPs using the above processes. Participant interest in different forms of training delivery was also sought from a list of commonly available methods, utilising a three point Likert-type scale.

Procedures

Once permission had been granted by NSW Department of Education and Training (DET), the supervisors of all the ISTB teams and AOTs in the three participating regions were contacted and their teams invited to participate. All teams agreed to participate. In total 18 teams were visited for the purposes of data collection over a three week period. The first author attended a regularly scheduled team meeting, which allowed for pre-contact which has been reported to increase the response rate of participants to questionnaires (Wiersma & Jurs, 2005). After a brief presentation by the first author, the participants were left to complete the questionnaire independently and anonymously. The questionnaires (complete or incomplete) were then collected by the team leader, placed in an envelope, and sealed for later collection. Behaviour specialists absent from the scheduled meeting were left a copy of the questionnaire including a reply paid envelope.

Data Analysis

The data was coded and analysed using SPSS (v.17). To ensure accuracy of data entry,, , 33% of all questionnaires entered were checked by an independent observer for consistency and accuracy. Percentage agreement was calculated as per Kazdin (1982), resulting in reliability of data entry of 99.4%. Descriptive statistics (frequency distributions) were then determined for independent and dependent variables. As data were categorical in nature, Chi Square tests were conducted to determine the associations between selected independent and dependent variables. Due to multiple analyses, α was set to 0.01 for all tests of significance.

RESULTS

Participant Demographics

Of the 92 behaviour specialists invited to participate in this research, 86 (93.5%) completed and returned the survey instrument. The majority (92%) were employed as ISTBs, the remaining participants were AOTs. More than half (54%) had been employed in their current role for 5 years or less. Relevant post graduate studies in special education had been competed by more than half (53%) of all respondents (all undertaken in Australia), with more than half of these (56%) completing their studies 9 or more years ago. Only three respondents were currently enrolled in postgraduate studies in special education. Participant demographic information such as age, gender, and ethnicity were not sought, as the group surveyed were not intended to be compared to any others for statistical analysis.

Tertiary Training in FBA

Just over one quarter of respondents (27%) reported receiving 10 hours or more of training in FBA during their tertiary studies. Of those, 91.3% had completed postgraduate studies in special education. Training in FBA of less than 10 hours was reported by 33%, with 40% reporting no tertiary training in FBA. Participants who had completed their postgraduate qualifications in special education 9 or more years ago were found to have received significantly less training in FBA than those who had completed their studies 8 or less years ago ($p = 0.01$, $df = 2$, $\alpha = 0.01$).

In-service training in FBA and self education

In-service training in FBA of more than one day (from their current employer, or an external agency) had been received by 22% of respondents. One day of FBA training was reported by 43% of respondents. Over a third of respondents (35%) had not received any training or had received only a brief overview of the process (less than one hour). Of all respondents, 14% had received no training in FBA either at university or from in-service training and development. Those who had not

completed postgraduate studies in special education were no more likely to have attended in-service training in FBA than those respondents who had ($p = 0.59$, $df = 2$, $\alpha = 0.01$).

In response to items concerning self education, 77.9% of respondents reported that they had accessed at least one book or research article on FBA, and 58.1% reported having accessed at least one internet sites on FBA. In total, 83.7% of respondents had accessed at least one book or research journal on FBA and accessed at least one internet site on FBA (16.3% had not accessed either), 25.6% of respondents had read at least one book or research article on FBA but had not accessed the internet to gain information on FBA. Conversely, 5.8% of respondents had accessed at least one internet site, but no books or research articles on FBA.

Summary of training from all sources

When all training sources were analysed, only 2 respondents reported no training in FBA from courses or self education. Conversely, 9% of respondents reported receiving more than 10 hours of tertiary training and attending more than 1 day of in-service training in FBA. Of these, all but one reported additional self education via printed or electronic sources.

Use of Processes in FBA

When participants used indirect assessments, 84.9% of respondents reported using school records and/ or incident reports on at least a monthly basis to gather data (see Table 1). This was closely followed by interviews and or rating scales (74.4%). When administered, interviews and rating scales were more commonly given to teachers to complete rather than to parents or students. Unstructured interviews with teachers, parents and other professionals were reported to be used by 16% of respondents.

Table 1: Frequency of Use of Indirect and Direct Assessment Instruments

	Frequency of Use		
Assessment Instrument	Never	1 – 2 per year	1 or more / term
F A Interview / Inventories	10.6	14.1	75.3
Behavioural Rating Scales	26.7	17.4	55.9
School Discipline Records	2.4	11.7	85.9
Anecdotal reports	1.2	2.4	96.4
A-B-C Recording	8.1	20.9	71.0
Scatter plot	44.0	20.3	35.7
Interval Recording	14.1	11.8	74.1
F A Observation Form	28.9	20.5	50.6

Note. The values represent percentages.

For direct assessments almost all respondents (96.5%) reported using anecdotal reports on a least a monthly basis, with the more structured interval recording strategy used by 74.1% of respondents' at a similar frequency (see Table 1). Just over half of the respondents (50.1%) reported using the FAOF (O'Neill et al., 1997) on a monthly basis.

Almost two thirds (64%) of respondents reported using three or more forms of data collection when creating behavioural intervention plans. Similar numbers of respondents reported writing

formal hypothesis statements at a frequency of one or more per month. Forty three percent of respondents reported testing their hypotheses via experimental manipulation (use of ABAB) on at least a monthly basis. Similar numbers reported having never tested their hypotheses (44.2%).

Frequency of writing FBA based behaviour intervention plans

Verified FBA behavioural intervention plans (which included experimental manipulation) were written by a third of respondents (34.9%) on a monthly basis, with more than half (53.5%) of respondents reporting having never written a verified FBA based behavioural intervention plan.

Training Effects on the Frequency of FBA based BIP writing

When training from all surveyed sources was cross-tabulated with the frequency with which respondents reported writing FBA based behavioural intervention plans, the only variable which showed a significant association was respondents' use of three or more internet sites on FBA ($p = 0.01$). A trend towards significance occurred between the number of hours of instruction in tertiary courses and the frequency at which behavioural intervention plans were written ($p = 0.02$). Respondents with postgraduate qualifications in special education were more likely to write FBA based behavioural intervention plans ($p = 0.01$ at $df = 2$, $\alpha = 0.01$). However, the recency of this training was found not to significantly affect the frequency at which respondents wrote FBA based behavioural intervention plans ($p = 0.09$ at $df = 2$, $\alpha = 0.01$).

Most useful training in common FBA instruments

The most commonly cited useful training source in learning how to use all the assessments instruments surveyed was from a colleague whilst on the job (see Table 2). This was followed by postgraduate and in-service courses. For all instruments, fewer than 10% of respondents described professional reading or undergraduate courses as the most useful training source.

Table 2: When Trained, the Most Useful Training Source for Indirect and Direct Assessment Instruments / Methods

Assessment Instrument	No Training	Under-graduate Course	Post Graduate Course	In-service Course	On the job from a colleague	From professional reading
FAI inventories / checklists	7.2	1.2	21.7	21.7	42.2	6.0
Behavioural Rating Scales	17.5		10.0	20.0	43.8	8.7
A-B-C Recording	7.1	4.8	26.2	13.1	40.5	8.3
Scatterplot	28.6	3.6	19.0	11.8	31.0	6.0
Interval Recording	9.4	8.2	11.8	7.1	57.6	5.9
F A Observation Form	11.9	1.2	9.5	26.2	44.0	7.2

Note. The values represent percentages of participants reporting training (or lack of) in these assessment methods (all participant responses included). Totals add to 100%.

Participants Attitude to Future Training and Development in FBA

Approximately half of the respondents indicated that they were agreeable to training and development in all the processes surveyed, with highest agreement on the need for more training and

development in hypothesis testing (x = 2.57, SD = 0.66) and least for training in direct assessment techniques (x = 2.19, SD = 0.88). The frequencies, means, and standard deviations for responses to all items are presented in Table 3.

Table 3: Participant Attitude to Future Training and Development in FBA Processes

	Disagree	Neutral	Agree	Mean	Standard Deviation
Indirect assessment	21.4	22.6	56.0	2.35	0.81
Direct assessment	31.0	19.0	50.0	2.19	0.88
Hypothesis Formulation	18.9	23.5	57.6	2.39	0.79
Hypothesis Testing	9.3	24.4	66.3	2.57	0.66
Writing FBA based behaviour intervention plans	20.2	17.9	61.9	2.41	0.81

Note. Likert scale values; Disagree = 1, Neutral = 2, Agree = 3. Agreement category values represent percentages.

Participants responded favourably to all the proposed delivery modes for future training and development in FBA (all delivery mode mean scores > 2). The most preferred method was 'on the job training with demonstration, with coaching and feedback' with 69% of respondents in agreement (x = 2.56, SD = 0.72). The least preferred mode was a course presented by an external agency, with 56% of respondents indicating disagreement or a neutral attitude. Printed materials were the second least preferred mode with 46.9% of respondents indicating disagreement or a neutral attitude (see Table 4).

Table 4: Participant Attitude to Delivery Mode of Training and Development in FBA

	Disagree	Neutral	Agree	Mean	Standard Deviation
Printed Materials	19.8	27.1	53.1	2.33	0.79
Interactive CD-Rom	14.3	23.8	61.9	2.48	0.74
Presentation (staff meeting)	17.1	15.8	67.1	2.50	0.77
Regional in-services	19.1	22.6	58.3	2.39	0.79
On the job demonstration	13.1	17.9	69.0	2.56	0.71
Course by external agency	20.3	35.7	44.0	2.39	0.79

Note. Likert scale values; Disagree = 1, Neutral = 2, Agree = 3. Agreement category values represent percentages.

DISCUSSION

Most behaviour specialists in this study reported having received some training and development in FBA. This is encouraging as training in FBA, data driven behavioural intervention planning, and PBS, have only been conducted in NSW in the last decade for students enrolled in regular settings (see Arthur, Bruveris, Smith, & Stephenson - Roberts, 2002; Mooney et al., 2008). The recent adoption of PBS by two of the three regions surveyed (Mooney et al., 2008; Positive Teaching, 2007), may account for almost two thirds of respondents having received in-service training in FBA. More than two-thirds of the behaviour specialists operated in these two regions, suggesting that not all of the behaviour specialists in these PBS regions have received in-service training in FBA based behaviour intervention planning processes. Some training was provided to behaviour specialists and school counsellors from one region surveyed in PBS and FBA based behavioural intervention planning in 2005 (Newcomer, 2005). Many of the behaviour specialists in this region have undergone training to become PBS coaches to their schools. As intervention is only at the universal level, behaviour specialists are not required to conduct FBA based interventions at this time.

Tertiary training in FBA was reported to be delivered almost exclusively during postgraduate special education courses, and to those more recent graduates. This recency effect was an expected result given that FBA has only been mandatory in the USA since 1997, and, the inclusion of FBA in Australian courses is likely to have experienced a lag effect. What was unexpected was that more than half of the pre-1998 trained postgraduate participants reported some FBA tertiary training. It may be that some tertiary institutions were staffed by lecturers trained in the USA or with experience in high support needs students, for whom FBA was originally designed (see Iwata et al., 1982).

The number of respondents that could be considered highly trained was low (only 1in 9). These respondents had received more than 10 hours of tertiary training and more than 1 day in-service training. What was clear from the results was that those who had not received tertiary training in FBA were no more likely to have attended in-service training in FBA than those respondents who had. This would suggest that widespread training in FBA has occurred in some regions, with behaviour specialists attending in-service training regardless of their prior training and experience in FBA.

A US study conducted by Scott, Liaupsin et al. (2005) found that initial basic training in FBA limited to one to two days was insufficient to allow participants to produce technically sound behavioural intervention plans. What has proved more successful was the provision of 18 hours of initial training, followed by 10-12 hours of on-site support, resulting in school-based teams acquiring the knowledge and skills to successfully conduct FBAs (Lane et al., 2007). Participants from this study indicated that they had received some training and development in FBA processes from colleagues. What was not determined was whether it was ongoing and in the field, rather than during scheduled team meetings.

Self education in FBA was surprisingly high, and would indicate strong respondent interest in this area. Commeyras and DeGroff (1998)reported high rates of professional reading by specialist reading teachers in their study. They reported that 96.2% of the specialist teachers had accessed one or more books, 63.6% had accessed one or more research articles, and 35.5% had accessed one or more electronic sources, to aid their professional development. These figures are high compared to the low professional reading figures generally reported by teachers (Rudland & Kemp, 2004). This study did not separate books from research articles as a self education source, the figures however are encouraging, with over three-quarters of respondents having accessed books or research articles on FBA. Just over half of the respondents reported using internet sites related to FBA, perhaps due to the pragmatic nature of their content, and the ease and flexibility of access (Sailor et al., 1999 - 2000). This is higher than the figure of 35.5% reported in the Commeyras and DeGroff study, and may reflect the increase in use of the internet in the past decade as a source of professional information by teachers (Kao & Tsai, 2009).

There appears to be a tendency to use less structured forms of data collection such as anecdotal reports and A-B-C recording rather than more structured methods (eg. interval recording). I The ease of use and the very high reported exposure to training in anecdotal reports by behaviour specialists are possible explanations for this preference. Compared to the reported frequency of use of indirect and direct data collection methods used by NSW special educators in the Arthur et al. (2002) study (some of whom were behaviour specialists), almost twice as many participants in this study reported

using indirect and direct assessments on a regular basis (for example; Motivational Assessment Scale 56% vs. *19%*, anecdotal reports 96% vs. *48%*, ABC data 71% vs. *42%*, and, scatterplot 36% vs. *17%* [Arthur et al. figures in italics]).

Behavioural specialists in this study often included at least three forms of data to formulate behavioural intervention plans, however, one third of behaviour specialists did not summarise the outcome of their assessments by writing a formal hypothesis statement. These hypothesis statements or competing behaviour pathways (O'Neill et al. 1997) provide an important link between the results of assessments and planned intervention (Van Acker et al., 2005).

Forty three percent of respondents regularly conducted experimental manipulations to test their hypotheses. This is higher than figures reported from a recent US study on FBA-based behavioural intervention planning practices in schools by Van Acker et al. (2005) where only 15% of behavioural intervention plans included hypothesis verification by experimental manipulation. It may be that descriptive methods have been adequate in identifying behavioural function for many students with challenging behaviours enrolled in regular schools. Another possibility is that behaviour specialists lack confidence, due to inadequate training, to guide classroom teachers in the process of experimental manipulations, and they are avoided. Respondent identification of this area as warranting further training and development would support this suggestion.

Some debate continues as to whether experimental manipulations are always necessary when initial descriptive assessments have shown a clear relationship (Doggett et al., 2001). Other difficulties with the use of experimental manipulation such as the risk of provoking severe aggression (Alberto & Troutman, 2009; Radford & Ervin, 2002), the time taken, and the complexity of the process (Quinn et al., 2001) may also reduce use. In classrooms, what may be more feasible for teachers is structural analysis. Structural analyses involve assessing antecedent conditions that trigger behavioural responses (Stichter, Sasso, & Jolivette, 2004).

What appears evident from this study is that tertiary or in-service courses on FBA, or professional reading alone, regardless of quantity, were insufficient to encourage behaviour specialists to regularly use FBA processes including experimental manipulations and to produce verified FBA based behavioural intervention plans. The relationship between training received at tertiary level and FBA based behavioural intervention plan production approached statistical significance, and may indicate that such training can be influential. It is possible that training and development in some processes to date has been insufficient. The same conclusions have been drawn regarding FBA training and development efforts in the USA (see Blood & Neel, 2007; Gable, Hendrickson, & Smith, 1999; Scott, McIntyre et al., 2005).

In this study, the frequency of FBA process use did not appear to relate clearly to behaviour specialists' attitudes to future training and development. An inverse relationship was expected between usage and interest in future training. When high usage was reported such as in direct assessment methods, half of the respondents indicated a positive attitude to future training and development. This could suggest that some of those who currently conduct these assessments and processes may be unsure of some aspect of their implementation, or would welcome re-training. The high interest in training and development in experimental manipulations would suggest further professional development is welcomed.

Consistent with the research literature on effective professional development (Williams & Coles, 2007; Landrum et al., 2002), behaviour specialists reported the most useful previous training source for assessment instruments / methods was that which was delivered by their colleagues whilst on the job. This preference for collegial training and support has been reported by classroom teachers in other Australian studies (Arbuckle & Little, 2004; Carter, Clayton & Stephenson, 2009), and was also the preferred option for any future training and development in FBA. This finding differs with the preferences of special educators in the Pindiprolu et al. (2007) study where one day workshops were the preferred option, with onsite group-work training ranked second.

Collegial training by those with FBA based behavioural intervention planning expertise could be problematic however due to the low numbers reporting extensive training in the regions surveyed. Mooney et al. (2008) acknowledged that there were insufficient numbers of skilled professionals to conduct FBA at present in their region (this region participated in this current study). What may provide an effective solution is a 'trainer of the trainer' model utilized in New Zealand to increase the

numbers of behaviour specialists skilled in FBA (LaVigna, Christian, & Willis, 2005). LaVigna et al. (2005) reported that effective training of local trainers was achieved using this model.

The negative attitudes of respondents to 'one shot' training (Conroy et al., 2000; Gertsen et al., 1997) via regional in-services and external courses could be explained by the 'sit and get' method of content delivery from experts, which can lack context and on-site support for implementation (Klingner, 2004). Teachers' perceptions of experts and research have been reported to be poor (Landrum, Cook, Tankersley, & Fitzgerald, 2007), with Gersten (2001) suggesting that teachers, especially those more experienced teachers who have experienced the 'bandwagon' effect repeatedly, are more cynical than other professionals (Gersten Vaughn, Deschler, & Schiller, 1997; Landrum et al., 2007).

LIMITATIONS

A number of internal validity issues should be taken into account when interpreting the results of this study. The survey instrument developed for this study was not formally tested for its construct validity or internal consistency reliability, although a pilot run and an expert review were conducted to improve the clarity and efficiency of the instrument. These reviews resulted in no additional assessment instruments or planning processes suggested by the expert reviewers or teachers, indicating that the survey questionnaire was considered comprehensive. Another issue was the possible influence of fellow colleagues on responses, as teams completed these surveys during regularly scheduled staff meetings rather than in isolation.

As one third of participants reported not writing formal hypothesis statements, there is a risk that assessments conducted may not have informed selection of interventions included in the BIPs. This problem has been reported elsewhere in FBA training literature (see Scott, Liaupsin et al., 2005; Sasso et al., 2001; Van Acker et al., 2005). Although the survey did ask whether participants used processes common in FBA when formulating their behaviour intervention plans, it did not explicitly ask whether the FBA they conducted informed their behaviour intervention plan. Participants were only asked if they had written a BIP based on all of the FBA processes, the link between them is inferred, and should have been more explicitly assessed.

The number of participants self-reporting the use of experimental manipulations to test hypotheses should perhaps be viewed with caution. Some researchers have questioned the reliability of teacher self reports (Wickstrom, Jones, LaFleur, & Witt, 1998). Participants were not required to submit any FBA based behavioural intervention plans to validate their responses. Additionally, their interest in further training and development in this area would suggest that they lack confidence in this process, raising questions as to the accuracy of the reported results. Also, the survey instrument only listed (as an example) the use of reversal designs (ABAB). Respondents were not asked explicitly what experimental manipulations they were undertaking (structural or functional analyses), only the frequency at which they conducted them.

A further limitation of this study is the unknown quality of the training participants received in FBA. In the category of self education via books journals and internet sites, participants were not asked to list books or journals they had read, or to list the internet sites they had visited. Equally the quality of content delivered during tertiary education or other forms of professional development is also unknown.

As the population surveyed was limited to behaviour specialists from the greater Sydney region, the external validity of the findings is limited. The sample size, at 86, was relatively small but did represent 93.5% of the behaviour specialists in the three regions surveyed. These three regions service 42% of the state's student population, and are well situated for the delivery of training and development to teachers, given their urban location. This may not be the case in more than half of the state's educational regions which are semi-rural to rural.

CONCLUSIONS and RECOMMENDATIONS

Although most behaviour specialists have reported receiving some training in FBA, training has not resulted in widespread application, with fewer than half (n = 40) of the behaviour specialists reporting they had written a verified FBA based behaviour intervention plan. It may be that behaviour specialists in this study prefer to select intervention strategies that have worked with past students displaying similar behavioural topographies (Ingram et al., 2005), rather than conducting more time-consuming FBAs. For behaviour specialists to adopt this assessment process as standard practice, it would appear that a number of systematic changes would need to occur. As has been suggested by researchers in the USA, clear guidelines will need to be determined to indicate when a full FBA is required, and what model constitutes a FBA (Conroy et al., 2000; Gresham et al., 2004; Sasso et al., 2001).

There will also need to be an attitudinal shift in our learning communities toward positive and proactive student behavioural planning and discipline, as has been urged by Hendrickson, Gable, Conroy, Fox and Smith (1999). In addition, regular classroom teachers may need additional training in Applied Behaviour Analysis (ABA), as they will be the ones implementing intervention strategies and will need to understand the rationale behind FBA and related interventions. Lack of knowledge and understanding of ABA theory by regular teachers has often resulted in poor implementation integrity, limiting the effectiveness of FBA based interventions (see for example Blood & Neel, 2007; Gunn, 2002; O'Neill & Stephenson 2009; Sterling-Turner, Watson, Wildmon, Watkins, & Little, 2001).

Fortunately, the behaviour specialists in this study appear skilled in some FBA processes, and training in the less familiar processes appears welcomed. To address behavioural specialists' training needs, extensive training and development in the identified FBA concepts and processes should continue. The content of this training could be guided by the list of skills and competencies compiled by Conroy et al. (2000). The amount of training required should be determined by individual circumstances and needs (Conroy et al, 2000).

Given the participants' attitudes to training and development sources, training might best be presented by fellow behavioural specialists with acknowledged expertise in FBA based behaviour intervention planning. Their endorsements may increase the usability and acceptability of this assessment technology (Landrum et al., 2007). In addition, on-going applied practice with coaching and feedback from experienced colleagues should be provided whilst on the job until accuracy and confidence is achieved (Lane et al., 2007).

The findings of this study suggest that many behaviour specialists already have some knowledge and expertise in FBA based behavioural intervention planning and that they are open to further education in this area. It could be expected that when long-term, well-supported training, including practice and feedback, is provided, behaviour specialists would be able to successfully conduct all FBA processes (see Chandler et al., 1999), including accurately conducting experimental manipulations (Iwata et al., 2000; Moore et al., 2002; Wallace, Doney, Mintz-Resudek, & Tarbox, 2004). Provision of ongoing professional development in this area for behaviour specialists should be a priority for the NSW DET.

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Biographical note

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APPENDIX

Abridged version of the survey questionnaire.

SECTION ONE: Demographic Information

1. Please indicate in which position you currently are employed by the Department of Education and Training.
2. What is the tenure of your current position?
3. If casual or permanent part-time, how many days per week do you work in that position? (eg. 2 days / week, 2.5 days / week)
4. How many years have you been employed in your current role (as an ISTB, Autism Outreach) with the Department of Education and Training?
5. What undergraduate qualification do you have?
6. Where did you complete your undergraduate studies?
7. What is your highest level of *completed* post-graduate qualification?
8. When did you complete your post-graduate qualification?
9. Where did you complete your post-graduate studies?
10. Are you currently enrolled in a post-graduate course?

SECTION TWO: Prior training received in FBA.

11. During either your undergraduate or post-graduate studies, how many hours training did you receive in Functional Behavioural Assessment / Analysis?
12. Since completing your tertiary studies, have you attended any training and development delivered by the D.E.T or another agency in Functional Behavioural Assessment / Analysis?
13. As part of your own professional development, have you read any books or research journals on the process of, or application of Functional Behavioural Assessment / Analysis?
14. As part of your own professional development, have you accessed information on the internet about Functional Behavioural Assessment/Analysis?

SECTION THREE: Frequency of use of indirect observation methods / instruments often used in FBA and most useful training source.

15. Whilst in your current position, have you used / administered any of the following indirect assessment methods / instruments when working with students who display challenging behaviours?
16. Whilst in your current position, whom have you used the following indirect assessment methods / instruments with?
17. Are there any other indirect methods you use? If so, what, and how frequently?
18. Which training location has been **most** useful in you learning how to use the Functional Assessment Interview / Inventory / Checklist method?
19. Which training location has been most useful in you learning how to use the Motivational Assessment Scale or Problem Behavior Questionnaire instrument?
20. Which training location has been most useful in you learning how to use the Achenbach, Connors, BASC, or Devereaux assessment instrument?
21. Whilst in your current position, which of the following direct observation methods have you used when working with students referred for challenging behaviours?

SECTION FOUR: Frequency of use of direct observation methods / instruments often used in FBA and most useful training source.

22. Which training location has been most useful in you learning how to use the A – B – C direct observation method?

23. Which training location has been most useful in you learning how to use the Scatter plot observation method?
24. Which training location has been most useful in you learning how to use the Interval Recording direct observation method?
25. Which training location has been most useful in you learning how to use the Functional Assessment Observation method?

SECTION FIVE: Use of processes common in FBA when formulating behaviour intervention plans.

26. After making direct observations and reviewing indirect assessment information, do you write a formal hypothesis statement regarding the challenging behaviour? Eg. During group discussions, Terry will yell obscenities, to gain peer and teacher attention.
27. Do you test your hypothesis / hypotheses using experimental manipulations / structured observations (eg. Reversal design ABAB)?
28. When deciding on a behavioural intervention plan for challenging behaviours, how many forms of information do you use? Eg. Interviews, direct observation data, checklist scores, rating scales, record reviews.
29. Have you ever written a behavioural intervention plan based on *all* of the Functional Behavioural Assessment processes?(Including; indirect assessments, direct observations, hypothesis statements, **and** hypothesis testing)

SECTION SIX: Interest in receiving more support / training in the processes of FBA and preferred method.

30. What aspects or processes of Functional Behavioural Assessment would you like to receive more support or training in?
31. There are a number of established ways that training and support in Functional Behavioural Assessment could be delivered to you.
32. What other support, training, or information, if any, in functional behavioural assessment would you like delivered to you?