The Impact of Visual Representation of Cumulative Data for Dually-Diagnosed Clients in Residential Care on Staff Attitudes toward Behavioural Interventions

by

Stephanie Arruda

A thesis submitted to the School of Community Services in partial fulfillment of the requirements for the degree of Bachelor of Applied Arts in Behavioural Psychology

St. Lawrence College
Kingston, Ontario
Canada
April 2011
DEDICATION

I would like to dedicate this thesis to my family and friends who have all provided ongoing support during my four years in Behavioural Psychology.
ABSTRACT

Public posting has been shown to be very effective in modifying human behaviour. The effect of public posting of client behaviour is a relatively understudied area and it is the aim of this paper to further support its use. Sixteen participants from three residential agencies completed a pre- and-post questionnaire assessing their attitudes toward ABA (independent variable). After completion of the first questionnaire, the participants viewed ten graphs displaying client data for a maximum of ten minutes (dependent variable). In addition, three participants were observed prior to and following questionnaire completion to determine if the rate of reinforcement delivery was affected. The purpose of this study is to investigate whether staff attitudes towards behavioural interventions are impacted after viewing cumulative data on client behaviour. This was tested two ways. All participants completed the questionnaire and viewed client data while three participants were also observed delivering reinforcement prior to and post completing the questionnaire and viewing data to determine if there was an effect. The data supported the first hypothesis only. It was found that viewing client data favourably impacted staff attitudes toward ABA programming, $t(15) = 1.81, p < 0.04$, one tailed. The questionnaires indicated that attitudes increased from pre- ($M=4.75, SD=0.22$) to post-test ($M=4.80, SD=0.20$). It is concluded that public posting client data in residential care settings can impact staff attitudes toward ABA programming.
ACKNOWLEDGMENTS

Firstly, I would like to acknowledge Mary Champagne for sharing her knowledge, broadening my experience, and most importantly, inspiring me. The faculty in the Behavioural Psychology program deserve a big thank you and have made my time at St. Lawrence College an enjoyable learning experience. I would like to thank my grandfather, sister, aunt, and boyfriend for supporting my commitment to complete my degree, and being so understanding of the work load required for my success. And lastly, to my BPSYC family, who are encouraging and always humorous, and for that I am forever thankful.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEDICATION</td>
<td>ii</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>iii</td>
</tr>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>iv</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>v</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>vi</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>vii</td>
</tr>
<tr>
<td>CHAPTER</td>
<td></td>
</tr>
<tr>
<td>I. Introduction</td>
<td>1</td>
</tr>
<tr>
<td>II. Literature Review</td>
<td>3</td>
</tr>
<tr>
<td>Applied Behavioural Analysis</td>
<td>3</td>
</tr>
<tr>
<td>Public Posting</td>
<td>3</td>
</tr>
<tr>
<td>Fidelity</td>
<td>5</td>
</tr>
<tr>
<td>Relevant Disorders and Maladaptive Behaviours</td>
<td>6</td>
</tr>
<tr>
<td>Summary</td>
<td>9</td>
</tr>
<tr>
<td>III. Method</td>
<td>10</td>
</tr>
<tr>
<td>Participants</td>
<td>10</td>
</tr>
<tr>
<td>Informed Consent Procedures</td>
<td>10</td>
</tr>
<tr>
<td>Setting</td>
<td>10</td>
</tr>
<tr>
<td>Materials</td>
<td>10</td>
</tr>
<tr>
<td>Procedure</td>
<td>11</td>
</tr>
<tr>
<td>IV. Results</td>
<td>12</td>
</tr>
<tr>
<td>VI. Discussion</td>
<td>15</td>
</tr>
<tr>
<td>General Findings</td>
<td>15</td>
</tr>
<tr>
<td>Relation to Research</td>
<td>15</td>
</tr>
<tr>
<td>Strengths and Limitations</td>
<td>15</td>
</tr>
<tr>
<td>Multilevel Challenges</td>
<td>16</td>
</tr>
<tr>
<td>Contributions to the Behavioural Psychology Field</td>
<td>17</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>18</td>
</tr>
<tr>
<td>APPENDICES</td>
<td>21</td>
</tr>
<tr>
<td>Appendix A: Consent form</td>
<td>21</td>
</tr>
<tr>
<td>Appendix B: Questionnaire</td>
<td>23</td>
</tr>
<tr>
<td>Appendix C: Graphed client data for public posting</td>
<td>26</td>
</tr>
<tr>
<td>Appendix D: Recording sheet for observations</td>
<td>36</td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table 1. Means and standard deviations for pre- and post-test data of the questionnaire ..........12
Table 2. Means and standard deviations for pre- and post-test data for participants rate of reinforcement delivery.................................................................................................................13
Table 3. Raw observation scores (and average rate of reinforcement delivery) for each participant .........................................................................................................................................14
LIST OF FIGURES

Figure 1. Pre- and post-test data for the questionnaire presented in average response ...............13
Figure 2. Pre- and post-test data for rate of reinforcement delivery in 20 minutes .....................14
Chapter I - Introduction

Optimizing strategies to improve behaviour can include various approaches, such as verbal praise or written feedback. Another is the use of visual displays of data. Public posting is a secondary way to provide feedback to a person. Public posting is defined as “public, pictorial, or numerical feedback on an individual’s performance” (Staub, 1990, p. 250).

Public posting is a strategy that has been explored by many different researchers in an attempt to improve the behaviour of individuals. For instance, Van Houten, Nau, and Marini (1980) used public posting to reduce speeding behaviour on an urban highway. Staub (1990) used public posting in a school setting to decrease disruptive hallway behaviour and found positive results when public posting was paired with verbal praise and feedback. Both studies used the participants’ data to modify their behaviour. Using the participant’s data was found to be the most common way to use public posting, but not the only option for modifying behaviour.

Consider this example. Sandy is a residential care employee responsible for a number of duties with clients including implementing behavioural programs to suppress aggression. The clients Sandy works with are diagnosed with an intellectual disability ranging from mild to severe, and may also have a mental illness. It is important that Sandy follow the proper protocol when aggression is displayed in order to successfully modify the behaviour patterns. Because aggression can range in intensity and duration, following the behavioural programs can be challenging. Sandy has been working part-time with the same client for two years and aggression is consistently demonstrated on a weekly basis. When consulting with the residential team, Sandy expressed the concern that her client is not making progress and program revisions should be considered. Because Sandy only sees one month of data at a time, it is difficult to recognize cumulative changes that the client is making. An option would be to display the client’s cumulative data for Sandy to analyze as these changes are much more dramatic than those reflected in the daily or monthly displays. Sandy will be able to see the progress over two years and her attitude toward the interventions may improve. Even though Sandy had implemented the behavioural plans consistently and precisely, some behaviours do not improve quickly.

To help people in Sandy’s situation, Greene, Willis, Levy, and Bailey (1978) conducted a study to see if publicly posting client data would have an effect on staff behaviour. The majority of studies involving public posting have focused on modifying the behaviour of the participants by posting their data. Greene et al. (1978) moved away from that paradigm. If the purpose of a study is to improve the outcome for clients, it is rational for staff to understand the client’s behaviour and rate of progression. Since Greene et al.’s (1978) study, the effects of using public posting to display client data has been understudied. It is hoped that this study will spark interest in the area and intrigue further exploration. The results of the Greene et al. study will be discussed in the Literature Review section of the present paper.

It is important to note that treatment fidelity is also an area of interest for this study. Because client data is being analyzed, the effectiveness of behavioural programs is consistently analyzed. There are a number of reasons why a program may not be implemented correctly. If lack of program fidelity is apparent, it may be causing the lack of progress. If staff implement a program incorrectly and are unaware, this may lead them to lose faith in the program’s efficacy.

The current study involves staff members from residential treatment homes for individuals with a dual diagnosis. As several behaviours, ranging in severity from mild to severe are treated in a residential care setting, it is often difficult for staff to recognize improvement. As a result staff can become disenchanted with the process of data recording, viewing it as a time-consuming and unproductive exercise. Such attitudes may negatively affect the quality of
recording and the quality of care, so it would seem important to help staff develop a realistic and positive attitude toward data recording. Accordingly, the purpose of this study is to investigate whether staff attitudes towards behavioural interventions are impacted after viewing cumulative data on client behaviour. This is a viable research topic as it has the possibility to increase the awareness of the effectiveness of ABA-based interventions by front-line staff who implement these interventions. This increased awareness may increase their enthusiasm and dedication to implementing the programs consistently with a resultant direct impact on client behaviour. If the post-test results show an improvement in staff awareness and enthusiasm, it would be beneficial for residential care facilities to consider posting client data on a regular basis. After consulting the literature, as described below, it is hypothesized that staff attitudes regarding the effectiveness of ABA-based interventions will improve after viewing the publicly posted data.
Applied behaviour analysis (ABA) is a field of psychology concerned with analyzing and modifying behaviour (Miltenberger, 2008). ABA has been shown to be effective with many different populations including children with ADHD (Binder and Dixon, 2000), developmentally delayed adults with emotional difficulties (Matson and Coe, 1992), autistic individuals (Granpeesheh, Tarbox, and Dixon, 2009), and typically developing individuals (Austin and Soeda, 2008). Iwata et al. (1997) state that the area of intellectual disabilities (ID) has more ABA research than any other area (as cited in Miltenberger, 2008). Individuals with an ID may exhibit serious problem behaviours including self-injurious behaviour (SIB), aggressive behaviours, and destructive behaviours. A large amount of research has been conducted that demonstrates that ABA-based procedures can control or eliminate those specific problem behaviours (as cited in Miltenberger, 2008). Other areas where ABA has been successful include mental illness, education and special education, rehabilitation, autism, acquired brain injury, self-management, and child management. Although there have been many successful ABA interventions, it is known that behaviours take time to improve. There may be factors influencing the speed of results that include staff attitudes toward the intervention (Sy and Glanz, 2008).

The attitudes that staff hold about procedures they are implementing is of great importance. If a staff member is not convinced that what they are doing is working, it may be beneficial if employers could effectively change their attitudes. ABA has many principles that can be logically explained but the interventions do not always translate to the results quickly. It is generally known that humans like immediate results and it is known to have more powerful effects on behaviour than delayed reinforcement (Miltenberger, 2008). If the data does not show a program producing improvement immediately, confidence may decrease. This is often the case as behaviour changes are usually slow, gradual, and subtle and are less observable to individuals who see the client daily. In order to improve staff attitudes and performance, this study will use the technique of public posting to demonstrate client gains which will in turn affect staff attitudes.

Public Posting

A popular and well-established method to improve staff performance is to use feedback. Feedback can be provided in a number of ways including praise, immediate verbal feedback, and public posting. According to behaviour-analytic literature, public posting may be defined as visually accessible signs presented to the intended audience (Wosmek, 2009). Wosmek suggests that public posting may serve as an antecedent for task clarification, a discriminative stimulus to prompt behaviours or designate responsibilities, and as a consequence. Providing feedback has been shown to be effective in many areas including school settings (Holland and McLaughlin, 1982), attendance at work (Luiselli et al., 2009), reducing speeding (Van Houten, Nau, and Marini, 1980), and athletics (Brobst and Ward, 2002).

Public posting in school settings has been a well-researched area. Holland and McLaughlin (1982) investigated the effects of response cost, public posting, and group contingency on elementary school student’s disruptive behaviour during teacher supervision times. The combination of all three contingencies showed favourable results both post-intervention and follow-up. In a similar investigation of student behaviour, Staub (1990) utilized public posting paired with praise to decrease disruptive hallway behaviour in elementary school students. Public posting was shown to be an effective way to reduce mild disruptive behaviour (Staub, 1990). To discover whether elementary students’ reading could improve with public posting, Van Houten, Hill, and Parsons (1975) conducted a study which involved two
experiments combining timing, feedback, public posting, and praise with two grade-four classrooms, Experiment I, and a grade five classroom for Experiment II. Experiment I assessed rate of writing, on-task behaviour, and comments on performance in conjunction with the independent variables for class A and class B. The results showed that the condition of timing and feedback improved rates for all three behaviours in both classes, and the addition of public posting further increased the rates. Introducing praise resulted in a major increase in all behaviours and classes, apart from the performance comments with class B which only showed a slight increase. The authors could not conclude why praise was only effective with class A.

Experiment II included 19 grade-five children and the same independent variables as Experiment I. The dependent variables were comprehension exercises and multiple word-meaning exercises. It was found that timing, feedback, public posting, and praise improved comprehension and word meaning in the grade-five students.

Authors who use multiple contingencies with public posting have obtained significant results in improving school-related behaviours. Pairing public posting with praise is a promising technique. Public posting of photographs has been shown to be a reinforcer for grade-two children. The students could earn a spot to post their photograph on a publicly displayed bulletin board if they achieved 80% or higher on weekly spelling tests. Posting their photographs not only served as a reinforcer but it also prompted the students to praise each other when they were successful (Gross and Shapiro, 1981). It can be concluded that using public posting with school-age children is an effective way to manage a range of behaviours.

Gross and Ekstrand (1983) evaluated the use of publicly posted feedback regarding staff behaviour, e.g., increasing teacher praise in a classroom for handicapped children. Three teachers from classrooms for handicapped children participated in the study using an ABABCA design. Their rate of reinforcement was recorded and publicly posted daily. A significant increase in teacher praise was noted for all public posting phases. Luiselli et al. (2009) explored the effect of public posting on human services staff’s absenteeism.

In contrast to measuring staff or student behaviour, another way to post feedback is to use client data. The public posting of client behaviours (i.e., those in residential care, institutional care, etc.) and the relationship to staff behaviour is under-researched. Publicly posting client data as feedback is known as outcome feedback (Arco, 1991). According to Arco, the success or failure of interventions is conveyed through outcome feedback, which in turn, influences staff behaviour levels.

A search of the literature on public posting of client behaviour returned limited results. Only one study was found that measured and posted client gains from staff-implemented programs (Greene, Willis, Levy, and Bailey, 1978). In this study, Greene et al. (1978) publicly posted staff implementation of three specific behaviour programs. Two experiments were conducted in this study in which public posting was used to display the client’s participation in the program along with staff members’ names. The effect of public posting in experiment one, toilet-training, dramatically improved the program implementation. Client participation increased from 12.5% to 89.5% for males and 38.6% to 97% for females. The second experiment consisted of two physical-therapy programs and a standardized measure to determine the benefits of the programs. The first condition of immediate feedback showed slight and unstable results. When the second condition of public posting was initiated in conjunction with immediate feedback, the client’s made significant improvement in their physical therapy programs. The effects of public posting were maintained for 2 months. This study was groundbreaking in its own right, as Greene et al. (1978) were the first to measure if client performance impacted staff behaviour.
What set this study apart from numerous others that have utilized public posting is that the staff’s skill and execution of a task was not the topic of interest. Therefore, a logical way to determine the effectiveness of program implementation is to analyze client behaviour (Greene et al. 1978). It would be beneficial to use public posting as Greene et al. (1978) had because it not only returns significant results, but it also gives the staff a chance to see the progress clients are making. It is a way to stay notified of client improvement and address the problem quickly if improvement is not being made.

Providing feedback often returns favourable results, can be delivered immediately, and costs very little to organize the information (Geurcio et al., 2005). If residential care staff view progress that clients are making on an intermittent period (e.g., four to six months) through public posting of the results, staff attitudes towards ABA programming may improve. According to Van Houten (1980), public posting prompts and reinforces staff behaviour (as cited in Brobst and Ward, 2002).

Fidelity

Treatment fidelity is one of the most important aspects of programming. In general terms, treatment fidelity is described as the “program-as-planned and program-as-delivered” (Shen et al., 2008). Because the residences taking part in this study are designed for individuals with severe behavioural and intellectual disabilities, the programs written for the clients are very specific and individualized. Smith, Daunic, and Taylor (2007) recommend operationally defining the target behaviours in order to increase programming accuracy. When a program is implemented, there are several reasons why delivery of a program can be challenging.

First, there may be a lack of concord and congruency in the staff (Andersson and Johansson, 2008). Each staff member holds individual perceptions about treatment and therefore may deliver programs differently. An example of this would be punishing versus nurturing attitudes. A main issue discovered by many researchers is the need for staff to share an understanding of the aim of the residential care and how to achieve those aims (Andersson and Johansson, 2008).

A second issue that affects program implementation is the behavioural problems most residential clients present (Melde, Esbensen, and Tusinski, 2006; Andersson and Johansson, 2008). These difficult behaviours are often verbal and physical aggression directed towards staff and peers, destruction of property, and self-injurious behaviour (SIB). When an individual displays these maladaptive behaviours, it can affect staff and peer behaviour. If staff and other clients become withdrawn from the aggressive client, it can affect programming for everyone. Difficult behaviours have been shown to inhibit proper program implementation in school settings as well (Mihalic, Fagan, and Argamaso, 2008).

Mihalic et al. (2008) report that poor time management can also inhibit proper program implementation in a classroom. School and residential care scheduling are very similar. Both divide time into intervals where a specific activity is expected to be engaged in. Poor time management can be a problem in residential care as there are many times when an individual’s program is not executed fully because other activities have interfered (e.g., a group game can interrupt a program goal of individual play).

A strategy that has been shown to be effective in managing program implementation is staff supervision (Mihalic et al., 2008; Andersson and Johansson, 2008; Smith et al., 2007). Andersson and Johansson (2008) found that having a “unit manager” was important for the culture and quality of care in the residential homes. Consistency and the maintenance of
standards are more likely when a supervisor is overseeing daily functioning in a residence (Andersson and Johansson, 2008).

Maintaining treatment fidelity is critical to the success of clients in residential care. Without fidelity, inaccurate data and conclusions may be drawn (Melde et al., 2006). This should be avoided at all costs because every decision based on the data is made to help the individual succeed. All decisions have an impact on clients’ lives, whether big or small. When programs are not implemented correctly, it also slows down the results. If programs are being implemented improperly and staff are unaware of the lack of program fidelity it may contribute to negative opinions toward interventions.

Staff training can play an important role in treatment integrity (Luiselli, Bass, and Whitcomb, 2010). According to Luiselli et al. (2010), training direct-care staff in basic ABA principles, terminology, and procedures can allow programs to be implemented more effectively. Similarly, Singh et al. (2009) report that training staff in behavioural principles resulted in a reduced use of restraints, up to a 50% decrease, with individuals with an ID. Training employees has also been shown to be a positive method to reduce challenging behaviour in individuals with an ID, as they were better equipped to manage and/or suppress behaviour escalations.

Relevant Disorders and Maladaptive Behaviours

Because this research has a focus on posting client data, it would be beneficial to understand the relevant disorders and behaviours. For the purpose of this research, there will be a focus on ID, pervasive developmental disorder not-otherwise specified (PDD-NOS), and dual-diagnosis and the maladaptive behaviours of aggression, SIB, sexualized behaviour, and repetitive talk.

To be diagnosed with an intellectual disability, the DSM-IV (1994) states the person must have “significantly subaverage intellectual functioning (an IQ of approximately 70 or below) with onset before age 18 years and concurrent deficits or impairments in adaptive functioning” (p. 37). Four levels of mental retardation have been classified in the DSM-IV and include mild mental retardation (50-55 to 70 IQ), moderate mental retardation (35-40 to 50-55 IQ), severe mental retardation (20-25 to 35-40 IQ), and profound mental retardation (below 20 to 25 IQ). There have been many notions about how to effectively treat those diagnosed with an ID, beginning with institutionalization in the fifteenth and sixteenth centuries (Davison et al., 2008). Residential treatment options were introduced in the 1960’s as a reasoned way to teach developmentally delayed individuals many skills required to function in the community. Behavioural interventions have shown to be very effective in teaching individuals with ID how to perform everyday living routines and how to control problem behaviours. Teaching living skills plays a significant role in reducing the problem behaviours. ABA is grounded in the approach of replacing a maladaptive behaviour with an adaptive behaviour, which in turn, widens the person’s repertoire of acceptable and adaptive behaviours (Miltenberger, 2008).

PDD-NOS is defined as a pervasive developmental disorder (PDD) that does not meet the criteria for any specific PDD, i.e., autism, Rett’s disorder, childhood disintegrative disorder, or Asperger’s disorder (Scheirs and Timmers, 2009). The DSM-IV-TR (2000) defines PDD-NOS as

A severe and pervasive impairment in the development of reciprocal social interaction associated with impairment in either verbal or nonverbal communication skills or with the presence of stereotyped behavior, interests, and activities, but the criteria are not met for a specific Pervasive Developmental Disorder, Schizophrenia, Schizotypal Personality Disorder, or Avoidant Personality Disorder. For example, this category includes "atypical
autism”—presentations that do not meet the criteria for Autistic Disorder because of late age at onset, atypical symptomatology, or subthreshold symptomatology, or all of these (299.80).

The area of PDD-NOS is less studied than other pervasive developmental disorders primarily because there are many similarities with the diagnostic criteria. For instance, some clinicians have used the term Asperger’s disorder synonymously with PDD-NOS and higher functioning autism (as cited in Volkmar, 2007). Estimates presented in Volkmar’s (2007) research indicate that the ratio of diagnosed autistic individuals to PDD individuals is 2:3 as presented in epidemiological surveys. This may pose a gap in human services because numerous programs are offered to assist individuals with autism and their families, but qualifying criteria (i.e., diagnosis of autism versus PDD-NOS) differs across agencies. For example, one agency may accept all individuals with a diagnosis in the autism spectrum, while another agency may only serve those with the diagnosis of autism and deny those with a diagnosis of PDD-NOS.

Individuals who are diagnosed with a Dual Diagnosis suffer from an intellectual disability as well as a mental illness (Canadian Mental Health Association, 2010). The developmentally delayed population is reported to have a higher prevalence of mental illness than the normally developing population, with reports between 20% and 74% (as cited in Dosen and Day, 2001). There is a range of psychological, social, cognitive, neurological, and personality factors associated with the higher rate of prevalence in the ID community (Dosen and Day, 2001). Experiencing one or a number of these factors can increase a person’s vulnerability toward mental illness. Dosen and Day state that behaviour disorders are consistently reported in between 20% and 40% of individuals with ID with the most common behaviours including aggression, SIB, destructiveness, and anti-social behaviour. Antonacci, Manuel, and Davis’ (2008) research indicates that having a dual-diagnosis is a risk for developing aggression. In fact, the numbers range from less than 10% to more than 80%. The large range is attributed to small sample sizes, lack of uniformity in screening and assessment, inclusion criteria, and a general focus on high functioning individuals.

According to Dosen and Day, aggression is the most persistent problem behaviour in individuals with ID. Gardner and Graeber (1993) state that aggression is often the result of factors including: “operant conditioning, genetic disorders, personality traits, and psychopathology” (as cited in Dosen and Day, 2001, p.12). Moreover, aggression is often viewed as a form of communication by individuals with an intellectual disability (Reiss, 1994, as cited in Dosen and Day, 2001). Aggressive behaviours not only pose a risk to the individual but staff could also sustain injury (Luiselli, Myles, and Littman-Quinn, 1983). There are potential risks for an aggressive person including strained relationships, caregiver misuse of sedating medication, and the possibility of becoming a victim of abuse. Antonacci et al. (2008) report that between 2 and 40% of individuals with an ID exhibit aggression; the broad range is due to varying definitions of aggression and the number of behaviours included in the definition and the fact that some types of aggression are studied more frequently such as self-injurious behaviour, physical aggression to others or physical aggression to the environment. Other variables such as age and cognitive abilities also interfere with prevalence rates. There are many different reasons a person may engage in aggression. It may serve the function of communication when verbal behaviour is not developed. Aggression can also be an escape mechanism for individuals to avoid an undesirable behaviour (Antonacci et al., 2008).

SIB is another common behaviour presented by individuals with intellectual delays and is reported to have a prevalence rate between 8% and 14% of those institutionalized. SIB among
the ID population living with their families or in residential care is approximately 3% (Baghdadli et al., 2008). A possible explanation for the difference in prevalence rates is those individuals in institutional care may have been admitted because of their severe SIB, while individuals who remain at home or in residential care have either never displayed SIB or have been taught to manage the behaviour. SIB is more commonly displayed by individuals with limited cognitive abilities, minimal mobility, few self-help skills, impaired hearing, stereotypic behaviours, and less developed communication skills (Antonacci et al., 2008). Normally developing children may also exhibit SIB, but it usually diminishes with the acquisition of communication skills (Baghdadli et al., 2008). A study exploring 181 developmentally delayed individuals and commonly displayed maladaptive behaviours states that SIB was reported in 82% of the participants (Poppes, van der Putten, and Vlaskamp, 2010). Interestingly, 10% of the SIB was reported hourly, 34% daily, 30% weekly, and 26% monthly. It can be inferred that SIB is a problem behaviour that can occur with varying degrees of frequency. It was also noted in this study that participants with mental illness were at increased risk of displaying aggression. Baghdadli et al. (2008) report that half of children with PDD display SIB. Results from their study show that SIB decreases with age, although there were some cases of persistent, recurrent, or newly emerged SIB in PDD children that would not desist despite therapeutic intervention. It is apparent that SIB can disrupt one’s quality of life and displaying these behaviours can decrease the likelihood of successful community integration.

Sexualized behaviour problems occur in both males and females who are normally developing or not (St. Amand, Bard, and Silovsky, 2008). Inappropriate sexual behaviour (ISB) is a socially significant issue. It can be extremely difficult to manage and the consequences for the individual can be stigmatizing and negative (Lockhart, Guerin, Shanahan, and Coyle, 2009). If an individual displays ISB, it can severely limit community access. There is a small amount of research completed in the area of individuals with ID and ISB. Most of the sexual behaviour research is focused on sexual abuse or sexual offending (Lockhart et al., 2009). Sajith, Morgan, and Clarke (2008) report that men with ID may exhibit inappropriate sexual behaviours. The ISB can range from public masturbation to sexual assaults. The most common offences for individuals with ID are indecent exposure or assaulting another person. Day (1994) found that the assaults were especially directed at young people (as cited in Sajith et al., 2008). The interventions to treat ISB are based on behavioural techniques and include sex education, strengthening appropriate sexual behaviour, and training in social skills and assertiveness. Pharmacological interventions are also an option to manage ISB.

Research on repetitive or perseverative speech is most often found related to autism. Repetitive speech is not the same as the communication disorder of stuttering. Repetitive speech relates to fixation on one topic of interest and repeatedly discussing that topic. Rehfeldt and Chambers (2003) defined perseverative speech as discrete statements that occurred at least three seconds apart and focused on one of the following topics: sirens or alarms, dentist or doctor appointments, or coughing. Rehfeldt and Chambers’ research participant was an adult male diagnosed with autism and mild mental retardation. In this study, differential reinforcement of an alternative behaviour and extinction were used. This intervention reduced perseverative speech and increased appropriate verbal responses.

Behavioural intervention has successfully treated a range of different behaviours. Aggression, SIB, ISB, and repetitive speech have all improved considerably when behavioural interventions have been implemented (Antonacci et al., 2008; Dosen and Day, 2001; Sajith et al., 2008; Baghdadli et al., 2008). As mentioned before, ABA has been researched in the field of
intellectual disabilities more than any other area and the advances in behavioural techniques have improved the lives of many individuals.

Summary

ABA is an evidence-based therapy with a vast amount of research that demonstrates that ABA-based procedures can control or eliminate specific problem behaviours (as cited in Miltenberger, 2008). ABA has been shown to be effective with many different populations and behaviours (Binder and Dixon, 2000; Matson and Coe, 1992; Granpeesheh, Tarbox, and Dixon, 2009; Austin and Soeda, 2008). Specifically, aggression, SIB, ISB, and repetitive speech have all improved considerably when behavioural interventions have been implemented (Antonacci et al., 2008; Dosen and Day, 2001; Sajith et al., 2008; Baghdadli et al., 2008).

The studies reviewed provide evidence that the use of public posting is an effective method to improve performance. Specifically related to this research was Greene et al.’s (1978) study of publicly posting client data to improve staff behaviour. Posting client behaviour to influence staff is an area that requires more research. It is the intention of this study to provide more evidence that public posting is effective in impacting staff behaviour.

The participants in this study work with a client population with particularly challenging behaviours. It has been determined that severe maladaptive behaviours may impact staff and peer behaviour, which in turn may affect the quality of programming in the residence (Mihalic et al., 2008; Andersson and Johansson, 2008; Smith et al., 2007). Staff supervisors have been found to be effective in managing program implementation. Each residence in this study employed a staff supervisor.

The goal of this study is to determine whether publicly posting client data will have an impact on staff attitudes toward ABA-based interventions. If attitudes improve, staff may pay closer attention to programming detail and as a consequence improve the integrity of the programs. If public posting is effective in positively impacting staff attitudes, there is the possibility that staff will implement programming more diligently and clients will make progress that will be reflected in the data. Small changes in staff attitudes may be just what is needed to move the gears in the wheel of client success.
Chapter III - Method

Participant Description
Sixteen adult residential counsellors from three agencies participated in the project. There were eight female participants and eight male participants whose ages ranged from 21 to 38 years (M= 26.3, SD= 3.94). Ten participants had completed college, while four completed university. Two participants did not provide their educational background.

The student researcher presented the study to residence supervisors. They were then given a notice to post at each group home providing a full description of the project, including the fact that it was voluntary to participate. The participants were made up of three staffing groups: key workers, residential counsellors, and awake-overnight staff. Ten participants were key workers at the group homes. The key workers’ mean age was 26.2 years. The remaining six participants were residential counsellors, supervisors, and awake-overnight staff. Their combined mean age was 25 years.

Key workers have many responsibilities including case management, completing quarterly plans of care, communicating with family, writing programs and graphing data, and ensuring that client needs for clothing and personal items are met. Residential counsellors are responsible for implementing client programming and delivering reinforcement when appropriate, all duties associated with daily living at the residence, transporting clients to and from appointments, home visits, day program, etc., cooking, and running errands. Supervisors oversee all programming and house activities as well as attend meetings to communicate with managers and clinical services. Awake-overnight staff have responsibilities including supervision of all residents during sleeping hours, meeting any needs that arise overnight, packing school bags and communication books, completing household tasks including laundry, cleaning, cooking, etc., and awaking the residents and helping them to complete their morning routines. No inducement was offered for participation in the project.

Informed Consent Procedures
All participants gave informed consent by reading and signing a modified version of the “4th Year Thesis” consent form provided by the Behavioural Psychology program (Appendix A). They were informed of the right to withdraw at any time. Three of the sixteen participants also consented to be observed by the student researcher and a secondary observer. Rate of reinforcement delivery was recorded for the three staff.

Setting Description
All participants completed the pre- and post-test questionnaire in their place of work. The questionnaires were completed at the residence dining room or kitchen table, depending on which was available. Ball-point pens were provided for the participants to complete the questionnaire. The student researcher remained with the participants during completion so any questions could be answered. The graphed behavioural data was viewed, for an average duration of two-minutes, at the dining room or kitchen table after the questionnaire was completed for pre-test.

For the three participants who were observed delivering reinforcement, this was done in the residential location where they worked.

Materials
A questionnaire to determine participant’s attitudes toward ABA was developed by the student researcher (Appendix B). It was comprised of eight questions and was rated by the participant on a Likert scale of one (strongly disagree) to five (strongly agree). The post-test had an additional question that was not scored, and allowed the participant to write an opinion based on seeing the
client’s data, if it changed their view in any way not reflected in the previous eight questions. The following are examples of statements that were included on the questionnaire: Behavioural programming is important to client progress; I am attentive to behavioural programming while on shift; and, I see clients progress when behavioural interventions are implemented. The statements were developed by the student researcher and clinical supervisor.

Procedure

Participants contacted the student researcher via email, text messaging, or direct contact to arrange a time to complete the questionnaire and/or observation. The student researcher and second observer, if applicable, travelled to the residences on the date agreed upon for the participant to complete the specified aspect of research.

Before completing the questionnaire, participants were asked to choose a code number out of a bag. This was the code that they used for pre- and post-test and was known only to them. The questionnaire was given to the participant with the instruction to circle the number that most reflected their view. Participants were notified that question nine was for post-test only. For both pre- and post-test, the questionnaire took approximately five minutes to complete. The second component of the pretest consisted of presenting client’s anonymous behavioural data in graph form in a binder (Appendix C). The participant viewed the graphs and could ask questions. Ten minutes were allotted for the participants to view the graphs. The participant and student researcher arranged a time for the post-test to be completed.

The participants who took part in the observation were blind to the purpose which was to record the rate of reinforcement delivered. They were instructed to continue with their normal duties. The student researcher and second observer recorded frequency of reinforcement per two-minute interval for a total of 20 minutes (Appendix D). A cell phone stopwatch was used to record the time. Observations were scheduled one week prior to completing the questionnaire and one week post questionnaire completion in order to determine if rate of reinforcement was impacted based on the questionnaires and viewing client data. The same procedure was followed both pre-test and post-test observation.

There was a one-day delay between pre-test and post-test to allow the participants time to think about the data they had viewed. Three days after the pre-test, the participants completed the questionnaire for the second time; this time completing the ninth question.
Chapter IV: Results

This study was conducted to determine whether staff attitudes towards behavioural interventions are impacted after viewing cumulative data on client behaviour. A pre- and post-test questionnaire was administered to the participants. Some participants were also observed to determine if rate of reinforcement changed from pre- to post-test.

The primary hypothesis tested in this study was whether viewing client data would impact participant’s attitudes towards ABA programming and this hypothesis was confirmed. A paired samples t-test for means was conducted to explore the differences in participant responses between pre- and post-test and found significant results, \( t(15) = 1.81, p < 0.04 \), one tailed. The effect size is medium, with the Cohen’s \( d \) of 0.238. The results reveal that when client data was viewed participant attitudes toward ABA increased from pre- (M=4.75, SD= 0.22) to post-test (M= 4.80, SD= 0.20; see Table 1 and Figure 1).

Seven participants increased their scores from pre- to post-test, with an average increase of 1.5. One participant decreased one point from pre- to post-test, and eight had stable scores from pre- to post-test. The participant with a decreased score in post-test was a supervisor. The second supervisor in the study increased by one point and the third and fourth remained stable across both conditions. Of the ten participants whom were key workers, four increased from pre- to post-test, with an average increase of 1.75. The remaining six key worker participants showed stable scores from pre- to post-test. Both residential counsellor and awake-overnight participants increased one point from pre- to post-test.

Table 1

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>Test condition</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre</td>
<td>4.75</td>
<td>0.22</td>
<td></td>
</tr>
<tr>
<td>Post</td>
<td>4.80</td>
<td>0.20</td>
<td></td>
</tr>
</tbody>
</table>
A second hypothesis was tested to determine if the participants’ rate of reinforcement delivery would differ from pre- to post-test. This hypothesis was also tested using a paired samples t-test for means, \( t(2) = 1.89 \), ns. The means used in the t-test was the average for both observers’ ratings. Though the null hypothesis was not rejected, the results show that pretest was quite variable (M = 15.17, SD = 8.74), with the post-test having slightly improved results but still showing variability (M = 13.5, SD = 7.55; see Table 2 and Figure 2).

Two of the three participants decreased their rate of reinforcement from pretest to posttest (see Table 3) while the rate of reinforcement for the other participant increased. The interobserver reliability was 80% and 85% agreement for participant one, pre- and post-test, 100% both pre- and post for participant two, and 78% and 100% for participant three.

Table 2

<table>
<thead>
<tr>
<th>Condition</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre</td>
<td>15.17</td>
<td>8.74</td>
</tr>
<tr>
<td>Post</td>
<td>13.50</td>
<td>7.55</td>
</tr>
</tbody>
</table>
Figure 2. Pre- and post-test data for rate of reinforcement delivery in 20 minutes.

![Graph showing pre- and post-test data for rate of reinforcement delivery.]

Note: The numbers one and two directly below the graph represent observer one and observer two. The numbers one, two, and three represent the participants.

Table 3
Raw observation scores (and average rate of reinforcement delivery) for each participant

<table>
<thead>
<tr>
<th>Participant</th>
<th>Observer</th>
<th>Pretest</th>
<th>Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>One</td>
<td>21 (1.05)</td>
<td>14 (0.7)</td>
</tr>
<tr>
<td></td>
<td>Two</td>
<td>17 (0.85)</td>
<td>12 (0.6)</td>
</tr>
<tr>
<td>Two</td>
<td>One</td>
<td>6 (0.3)</td>
<td>5 (0.25)</td>
</tr>
<tr>
<td></td>
<td>Two</td>
<td>6 (0.3)</td>
<td>5 (0.25)</td>
</tr>
<tr>
<td>Three</td>
<td>One</td>
<td>19 (0.95)</td>
<td>26 (1.3)</td>
</tr>
<tr>
<td></td>
<td>Two</td>
<td>15 (0.75)</td>
<td>26 (1.3)</td>
</tr>
</tbody>
</table>
Chapter V: Discussion

General Findings

It was hypothesized that when staff viewed client’s cumulative data their attitudes toward ABA interventions would improve. The research findings were consistent with this hypothesis. It was found that when staff viewed client’s cumulative data their attitudes toward ABA programming improved.

A second hypothesis was tested to determine if staff member’s rate of reinforcement delivery would be affected after viewing the cumulative data. The results from testing this hypothesis suggested that viewing client data may improve reinforcement rate from pre- to post-test for those participants.

Half of the participants’ ratings on the questionnaire showed change from pre- to post-test, while half remained consistent across conditions. It is interesting to mention that the participant who decreased in post-test was a supervisor. This finding was unexpected, as it was casually hypothesized that supervisors would score high and consistent from pre- to post-test as they would have a very thorough understanding of behavioural principles and practices, whereas participants who were employed as key workers, residential counsellors, and awake-overnight would show a greater discrepancy in scoring from pre- to post-test. However, it was found that supervisors varied just as much as the other staff, in that two supervisors increased their score at post-test and one decreased. These findings illustrate that public posting of client data has an impact on these three levels of staff.

The participants in the observation condition all worked at different residences with the disabilities of each client varying greatly. From pre- to post-test, the rate of reinforcement delivery decreased for two of the three participants. It is impossible to attribute the drop in reinforcement solely to the completion of the questionnaire and viewing client data, as there were many other variables involved in their jobs. It would be easier to conclude that a client’s needs, behaviours, temperament, and level of supervision required dictate how much reinforcement a client receives. Although variables were taken into consideration when planning for the observations, it was very unlikely that the client and participant would or could be doing the same activity pre-and post-test. Time was consistent each observation.

Relation to Research

Most of the research in public posting is based on improving one’s behaviour by posting the results of the target behaviour and is demonstrated in a number of studies (Luiselli et al., 2009; Holland and McLaughlin, 1982; Staub, 1990; Van Houten, Hill, and Parsons, 1975; Gross and Shapiro, 1981; and Gross and Ekstrand, 1983). Although this form of public posting is effective, it is not the best way to modify staff behaviour. The current study found that using public posting with residential care staff impacted their attitudes toward ABA techniques. With further investigation, it may be possible to determine that public posting of client data will improve staff’s implementation of the programs and, consequently, client goals will be achieved earlier.

Greene at al. (1978) were the first to study how client progress affects staff behaviour. Data obtained in the present study are consistent with the results of Greene et al. who found that publicly posting client data produced steady, notable improvements in program implementation, although Greene et al. also provided immediate feedback to participants.

Strengths and Limitations

Continuing the research of the current study and the work of Greene et al. (1978) would be quite beneficial to many agencies that have staff directly working with clients. Modifying
staff behaviour based on client data is an efficient way to show staff how their efforts are being recognized (Greene et al., 1978). Public posting is a cost-effective way to ensure staff are implementing programs as effectively as possible. Supervisors will be more able to recognize treatment infidelity based on the posted client data. Public posting is a means to keep all staff aware of client progress and allows obstacles in the program to be modified. Significant results were found post-test for participants who completed the questionnaire. After the allotted ten-minute period to view the graphs, participant’s opinions about ABA programming were impacted and improved. This finding is intriguing because it gives rise to further investigation of the effects of publicly posting client data in order to impact staff behaviour.

Because this investigation only allowed participants to view the data once for a brief amount of time, it is possible that publicly posting client data on a regular basis may have a greater impact on staff attitudes. The brief amount of time allotted to view the client data may account for the low change in reinforcement rate post-test. It is possible that unlimited time and continuous, updated postings would increase staff’s delivery of reinforcement.

A limitation to this study is that the client data was not actually publicly posted. The data was anonymous and shown in a binder after the pretest. Although the results were significant, the findings may have been further supported if the data was posted at the homes and clients were identified. It may also be of benefit to post small goals that are part of a larger, long-term objective. This way the program goal may be reached more quickly because staff will be more aware of client improvement. It would be beneficial to further develop the hypotheses in this study by actually posting the client data in the residences and providing immediate feedback to staff when appropriate. As Greene et al. (1978) showed that providing immediate feedback to the participants in conjunction with the public posting produced favourable results. Similarly, Staub (1990) used public posting and praise to reduce disruptive hallway behaviour in elementary school children. This is another example to demonstrate that pairing public posting with praise or feedback could generate better results.

**Multilevel Challenges**

**Client:** The main challenge with the participants in this study was getting volunteers. The opportunity to volunteer in the study was presented at a supervisor’s meeting, where supervisors were given the notice to post in the residences to inform the other staff of the study. This was not an effective method to recruit volunteers, as the researcher later had to call the residences and send out additional sign up forms. One would be more likely to gather volunteers if trips were made to each residence and asked staff while they were on shift. This would provide a better opportunity to explain the study and answer any questions.

**Program:** The challenges at the residences were the varying staff members, that is, frequent changeover of staff. This is a challenge because staff members act differently in situations, which can affect the fidelity of programs. Although client’s have behavioural programs that need to be followed consistently in order for gains to be made, a certain amount of clinical judgement is required when working with exceptional individuals. When new staff join the team, it is especially difficult to ensure programs are followed consistently.

**Organizational:** Through the process of gathering the participant’s data, the agency had the opportunity to reflect on their current mode of storage. Because clients frequently move between residences within the agency, it is difficult for all of their data to follow them. This has resulted in data being stored in several locations and no master list of where to find it. Making a master list and storing it on a computer file will likely be easier to access and share with all members of the agency.
Societal: There are so many societal challenges when working with anyone with a developmental delay, mental illness, or learning disability living in a group home. Living in residential care is not a normal home environment. There are constantly people coming and going, whether they are staff, social service workers, or new clients. It is difficult for an individual to lead a “normal” life under these circumstances, not to mention the mental and physical difficulties they may already encounter. It is also difficult for the staff to regulate the behaviour of several clients simultaneously. As mentioned previously, when individuals displays maladaptive behaviours it can affect staff and peer behaviour. If staff and other clients become withdrawn from the aggressive client, it can affect programming for everyone (Andersson and Johansson, 2008). Therefore, it is important that residential care facilities have highly qualified individuals working front-line as well as a strong clinical team to provide insight to these issues as they arise. The community as a whole is more understanding of people with mental retardation but there is still progress that needs to be made.

Contributions to Behavioural Psychology Field

This study demonstrated that "posting" data can result in changes in the verbal behaviour about ABA-based techniques by paraprofessionals who implement behavioural treatment interventions for individuals with intellectual disabilities. However, due to the limited amount of time that the posted data were available, the intervention did not bring about significant changes in their actual "treatment" behaviour. Although significant results were only found for the first hypothesis, previous research has shown public posting is adaptable to many individuals and settings and it would be beneficial for more research to be conducted in this area. It is hoped that public posting of client data will positively impact program fidelity and give staff the opportunity to continually receive feedback based on client performance.
References


Singh, N.N., Lancioni, G.E., Winton, A.S., Singh, A.N., and Adkins, A.D. (2009). Mindful staff can reduce the use of physical restraints when providing care to individuals with


Appendix A: Consent Form

CONSENT FORM

STUDENT: STEPHANIE ARRUDA

COLLEGE SUPERVISOR: DREW McNAMARA

INVITATION
I am a student in my 4th year in the Behavioural Psychology program at St. Lawrence College and I am currently on placement at the Clinical Consultation Services with Mary Champagne M.A. Psych. Associate. As a part of this placement, I am completing a special project called an applied thesis and am asking for your assistance to complete this project. The information in this form is intended to help you understand my project so that you can decide whether or not you want to participate. Please read the information below carefully and ask all the questions you might have before deciding whether or not to participate. You can reach my supervisor Dr. Drew McNamara at (613)-544-5532 ext. 1225 if you have further questions.

WHAT WILL YOU NEED TO DO IF YOU TAKE PART?
If you take part in the thesis project you will be asked to complete a questionnaire relating to the topic of applied behaviour analysis and implementation and confidence. The questionnaire will be administered twice, once before the data is shown and once after, and you will complete it at your place of work. It will take approximately 5 minutes to complete the questionnaire each time. If you have agreed to be observed while working that will be done twice as well; once before the first questionnaire, and once after the last questionnaire.

WHAT ARE THE POTENTIAL BENEFITS TO ME OF TAKING PART?
This thesis project gives you the opportunity to further advance research on the effects of data display.

WHAT ARE THE POSSIBLE DISADVANTAGES AND RISKS OF TAKING PART?
There are minimal risks for taking part in the thesis project but you may become bored while filling out the questionnaire.

WILL MY TAKING PART IN THIS PROJECT BE KEPT PRIVATE?
Your name will not be incorporated into the questionnaire sheets; you will be assigned a number that will be used to track the changes from pre-to-post test. The data will be stored in a locked cabinet at the main consulting office. Only myself and my supervisor will have access to the cabinet. No one at your place of work will have access to your responses identified to you.

DO YOU HAVE TO TAKE PART?
It is up to you to decide whether or not to take part. If you do decide to take part, you will be asked to sign this consent form. If you do decide to take part, you are still free to withdraw at any time, without giving any reason, and without incurring any penalty. Your responses on the questionnaire have absolutely n relevance to your employment.

CONTACT FOR FURTHER INFORMATION.
This project has been approved by the Research Ethics Board at St. Lawrence College. The project will be developed under the supervision of Psychologist, Dr. Andrew McNamara, my supervisor from St. Lawrence College. I really appreciate your cooperation. If you have any additional questions or concerns, feel free to ask me, Stephanie Arruda, or you can contact my College Supervisor, Drew McNamara. You may also contact the Research Ethics Board at appliedresearch@sl.on.ca.

CONSENT
If you agree to participate in the project, please complete the following form and return it to me as soon as possible. A copy of this signed document will be given to you for your own records. An additional copy of your consent will be retained at the agency and in a secure location with the Research Ethics Board at St. Lawrence College.

CONSENT
By signing this form, I agree that:

- The study has been explained to me.
- All my questions were answered.
- Possible harm and discomforts and possible benefits (if any) of this study have been explained to me.
- I understand that I have the right not to participate and the right to stop at any time.
- I am free now, and in the future, to ask any questions about the study.
- I have been told that my personal information will be kept confidential.
- I understand that no information that would identify me will be released or printed without asking me first.
- I understand that I will receive a signed copy of this consent form.

I hereby consent to participate.

Participant/Parent/Guardian Printed Name: ____________________________

Age of Participant (If Under 18):______________

Signature: _______________________________ Date: ________

SLC Student Signature: ______________________ Date: ________

Printed Name: ____________________________
Appendix B: Questionnaire

ABA-What Do You Think?

Student researcher: Stephanie Arruda

To take part in this project you will need to fill out this questionnaire twice. Each time it will take approximately five minutes to complete. The questionnaire(s) will be completed at your place of work. After completing the questionnaire the first time you will view six graphs based on different behaviours from clients that have been treated using behavioural techniques. All behaviours will have been a target for at least six months in order to be included in the study. You will have 10 minutes to view all six graphs and ask any relevant questions. The following day you will complete the questionnaire for the second time.

Your responses will be kept confidential. All questionnaires will be stored in a locked cabinet and only I and my supervisor will have access to them. You have the right to withdraw at anytime, without giving any reason, and without incurring any penalty.

Once completed, please return the questionnaire to the student researcher or your supervisor at the residence.
ABA- What Do You Think?

Code Number: _________  Age: _____  Sex: _____  Ethnicity:___________________
Educational Level:______________

My role at the residential program is:

Key Worker:_____  Residential Counsellor:_____  Awake-overnight:____

Directions: Please complete the personal information section before submitting the questionnaire. The following questions deal with ABA and the implementation of interventions. Please circle a number from the scale that best describes your attitude. It will take approximately five minutes to complete the questionnaire. Please do not put your name on the questionnaire but instead use the code number you were assigned.

1. Behavioural programming is important to client progress.

1  2  3  4  5  
Strongly disagree  Strongly agree

2. Behavioural programs need to be followed consistently.

1  2  3  4  5  
Strongly disagree  Strongly agree

3. I am attentive to behavioural programming while I am on shift.

1  2  3  4  5  
Strongly disagree  Strongly agree

4. Advice coming from clinical team meetings increases my confidence in the interventions.

1  2  3  4  5  
Strongly disagree  Strongly agree

5. My behaviour affects client’s behaviour.

1  2  3  4  5  
Strongly disagree  Strongly agree

6. I see clients progress when the behavioural interventions are implemented.

1  2  3  4  5  
Strongly disagree  Strongly agree

7. It is important to know the rationale behind the behavioural intervention.

1  2  3  4  5  
Strongly disagree  Strongly agree
8. It is important for me to provide input into the clinical consultation process.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td></td>
<td></td>
<td></td>
<td>Strongly agree</td>
</tr>
</tbody>
</table>

Scoring: 1=1, 2=2, 3=3, 4=4, and 5=5. A high score indicates confidence in ABA principles and practice.

Post-test only:

9. Did you feel that viewing these data changed your attitude towards behavioural intervention in any way not reflected above?

___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

Appendix C: Graphed client data for public posting
Aggression 2001-2009
A decrease in aggression over 9 years
Aggression 2006-2009
A decrease in aggression over 4 years
A decrease in repetitive threats over 4 years.
Appendix D: Recording sheet for observation

### Recording Rate of Reinforcement

<table>
<thead>
<tr>
<th>Staff Code:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observer name:</td>
<td></td>
</tr>
</tbody>
</table>

**Target behaviour:** Reinforcement delivery will be recorded when a staff reinforces a client’s behaviour in the form of providing social praise, a tangible, edible, preferred activity, token, or point.

**Instructions:** Record the starting time in the first column. In the next column mark the number of times a reinforcer is delivered in the two-minute time interval. Total the number of reinforcers delivered during the interval in the last column. Add the subtotals in the last row.

<table>
<thead>
<tr>
<th>Time - two minute intervals</th>
<th>Rate of Behaviour</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>:</td>
<td>:</td>
<td>:</td>
</tr>
<tr>
<td>:</td>
<td>:</td>
<td>:</td>
</tr>
<tr>
<td>:</td>
<td>:</td>
<td>:</td>
</tr>
<tr>
<td>:</td>
<td>:</td>
<td>:</td>
</tr>
<tr>
<td>:</td>
<td>:</td>
<td>:</td>
</tr>
<tr>
<td>:</td>
<td>:</td>
<td>:</td>
</tr>
<tr>
<td>:</td>
<td>:</td>
<td>:</td>
</tr>
<tr>
<td>:</td>
<td>:</td>
<td>:</td>
</tr>
<tr>
<td>:</td>
<td>:</td>
<td>:</td>
</tr>
<tr>
<td>TOTAL:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>