



# Kent Academic Repository

**Brady, Lucy M. (2021) *Improving procedural fidelity of behaviour interventions in residential services: An organisational approach*. Doctor of Philosophy (PhD) thesis, University of Kent,.**

## Downloaded from

<https://kar.kent.ac.uk/87205/> The University of Kent's Academic Repository KAR

## The version of record is available from

<https://doi.org/10.22024/UniKent/01.02.87205>

## This document version

UNSPECIFIED

## DOI for this version

## Licence for this version

CC BY (Attribution)

## Additional information

## Versions of research works

### Versions of Record

If this version is the version of record, it is the same as the published version available on the publisher's web site. Cite as the published version.

### Author Accepted Manuscripts

If this document is identified as the Author Accepted Manuscript it is the version after peer review but before type setting, copy editing or publisher branding. Cite as Surname, Initial. (Year) 'Title of article'. To be published in *Title of Journal*, Volume and issue numbers [peer-reviewed accepted version]. Available at: DOI or URL (Accessed: date).

## Enquiries

If you have questions about this document contact [ResearchSupport@kent.ac.uk](mailto:ResearchSupport@kent.ac.uk). Please include the URL of the record in KAR. If you believe that your, or a third party's rights have been compromised through this document please see our [Take Down policy](https://www.kent.ac.uk/guides/kar-the-kent-academic-repository#policies) (available from <https://www.kent.ac.uk/guides/kar-the-kent-academic-repository#policies>).

**Improving procedural fidelity of behaviour interventions in residential services: An organisational approach**

Lucy M. Brady

PhD in Applied Psychology

University of Kent

2020

### **Acknowledgements**

Thank you to all the staff and service users who took part in this project. Thank you for welcoming me into your homes and your lives and showing such enthusiasm for the research throughout.

Thank you to Ciara and Peter, the two most patient people I have ever met. Your wisdom, humor and unwavering support were so appreciated.

Thank you to Mum, Dad, Helen & Claire for always being available to help, for listening to me complain and knowing how to make me laugh.

Thank you to Darren for everything. Without you, nothing would get done.

Finally, Juno and Lyla... despite your very best efforts, I managed to complete this project.

Thank you for making me laugh every day and giving me an excellent reason to take breaks and have some fun.

## Table of Contents

<i>Abstract</i> .....	<i>1</i>
<b>1.1 Thesis overview</b> .....	<b>2</b>
<b>1.2 Intellectual disability</b> .....	<b>3</b>
<i>1.2.1 Terms and Definition</i> .....	<i>3</i>
<i>1.2.2 Prevalence</i> .....	<i>4</i>
<b>1.3 Challenging behaviour</b> .....	<b>5</b>
<i>1.3.1 Definition</i> .....	<i>5</i>
<i>1.3.2 Prevalence</i> .....	<i>6</i>
<i>1.3.3 Impact</i> .....	<i>7</i>
<i>1.3.4 Causal models</i> .....	<i>8</i>
<i>1.3.5 Intervention</i> .....	<i>10</i>
<b>1.4 Positive Behaviour Support</b> .....	<b>13</b>
<i>1.4.1 History of Positive Behaviour Support</i> .....	<i>13</i>
<i>1.4.2 Limitations and effectiveness of positive behaviour support</i> .....	<i>17</i>
<b>1.5 Service provision</b> .....	<b>20</b>
<i>1.5.1 History of disability services in Ireland</i> .....	<i>20</i>
<i>1.5.2 Behaviour Support in Ireland</i> .....	<i>24</i>
<b>1.6 Procedural fidelity</b> .....	<b>26</b>
<i>1.6.1 Terms, definition and purpose</i> .....	<i>26</i>
<i>1.6.2 Medication adherence</i> .....	<i>27</i>
<i>1.6.3 Implementation science</i> .....	<i>31</i>
<i>1.6.4 Procedural fidelity in behavioural research</i> .....	<i>35</i>
<b>1.7 Summary</b> .....	<b>39</b>
<b>2.1 Chapter overview</b> .....	<b>41</b>
<b>2.2 Introduction</b> .....	<b>41</b>
<b>2.3 Method</b> .....	<b>45</b>
<i>2.3.1 Search Methods</i> .....	<i>45</i>
<i>2.3.2 Inclusion Criteria</i> .....	<i>45</i>
<i>2.3.3 Exclusion Criteria</i> .....	<i>45</i>

2.3.4 Selection of studies.....	46
2.3.5 Data extraction .....	48
2.4.6 Inter-rater reliability.....	53
<b>2.5 Results .....</b>	<b>55</b>
2.5.1 Study Design .....	55
2.5.2 Group design studies: .....	55
2.5.3 Single case design studies .....	56
<b>2.6 Discussion.....</b>	<b>70</b>
<b><i>Chapter 3: Procedural fidelity in residential services; perspectives of front line staff, management and clinicians.....</i></b>	<b>76</b>
<b>3.1 Chapter overview.....</b>	<b>76</b>
<b>3.2 Introduction.....</b>	<b>76</b>
<b>3.3 Methods.....</b>	<b>79</b>
3.3.1 Design .....	79
3.3.2 Sampling and Participants.....	80
3.3.3 Measures .....	80
3.3.5 Data analysis .....	82
3.3.6 Reflexivity.....	82
<b>3.4 Results and Discussion.....</b>	<b>83</b>
3.4.1 Themes .....	83
<b>3.5 Discussion.....</b>	<b>100</b>
3.5.1 Institutional culture.....	101
3.5.2 Accountability .....	103
3.5.3 Theory versus practice. ....	104
3.5.4 There is nothing positive about behaviour support. ....	106
3.5.6 Conclusion .....	107
<b><i>Chapter 4: Increasing procedural fidelity of behaviour support plans in residential homes: A Pilot study .....</i></b>	<b>109</b>
<b>4.1 Chapter overview.....</b>	<b>109</b>
<b>4.2 Introduction.....</b>	<b>109</b>

4.2.1 Support structure .....	110
4.2.2 Accountability .....	111
4.2.3 Knowledge and training of staff.....	112
4.2.4 Interventions .....	113
<b>4.3 Methods.....</b>	<b>118</b>
4.3.1 Experimental design.....	118
4.3.2 Setting .....	118
4.3.3 Participants and sampling .....	119
4.3.4 Measures and measurement.....	120
4.3.5 Ethics.....	124
4.3.6 Procedure.....	125
4.3.7: Reflexivity .....	129
<b>4.4 Results .....</b>	<b>130</b>
4.5.1 Feasibility of protocol.....	140
4.5.2 Impact on procedural fidelity and client outcomes.....	141
4.5.3 Quality of behaviour support plans .....	143
4.5.4 Impact of practice leadership levels .....	143
4.5.5 Extraneous variables .....	144
4.5.6 Limitations of study.....	145
<b>Chapter 5. Improving procedural fidelity of implementation of support plans in multiple settings.....</b>	<b>148</b>
<b>5.1 Chapter overview .....</b>	<b>148</b>
<b>5.2 Introduction.....</b>	<b>148</b>
<b>5.3 Methods.....</b>	<b>152</b>
5.3.1 Experimental design.....	153
5.3.2 Setting .....	153
5.3.3 Participants and sampling .....	154
5.3.4 Measures and measurement.....	157
5.3.5 Ethics.....	162
5.3.6 Procedure .....	162
5.3.7 Reflexivity.....	166
<b>5.4 Results .....</b>	<b>167</b>

<b>5.5 Discussion.....</b>	<b>182</b>
5.5.1 <i>Intervention package.....</i>	183
5.5.2 <i>Impact on procedural fidelity.....</i>	186
5.5.3 <i>Impact on service user outcomes .....</i>	188
5.5.4 <i>Limitations .....</i>	191
5.5.5 <i>Summary .....</i>	193
<b>Chapter 6: General Discussion.....</b>	<b>195</b>
<b>6.1 Chapter overview .....</b>	<b>195</b>
<b>6.2 Summary of results .....</b>	<b>195</b>
6.2.1 <i>Systematic review.....</i>	195
6.2.2 <i>Qualitative Study.....</i>	196
6.2.3 <i>Pilot study- testing feasibility of organisational intervention to improve procedural fidelity .....</i>	198
6.2.4 <i>Main study- experimental evaluation of an organisational intervention to improve procedural fidelity.....</i>	199
6.2.5 <i>Strengths and Limitations of research .....</i>	200
<b>6.3 Implications for practice .....</b>	<b>202</b>
6.3.1 <i>Relevance for service users.....</i>	203
6.3.2 <i>Relevance for frontline staff and managers .....</i>	205
6.3.3 <i>Relevance for organisations .....</i>	206
6.3.4 <i>Relevance for broader service system for individuals with intellectual disability.....</i>	208
<b>6.4 Theoretical implications – understanding how to increase fidelity.....</b>	<b>209</b>
6.4.1 <i>Increasing motivating operations to follow PBS guidelines.....</i>	211
6.4.2 <i>Antecedent Interventions.....</i>	213
6.4.3 <i>Intervention to address the balance of consequences.....</i>	217
<b>6.5 Implications for Future research.....</b>	<b>223</b>
<b>6.6 Concluding comments .....</b>	<b>227</b>
<b>7. References.....</b>	<b>229</b>
<b>8. Appendices.....</b>	<b>255</b>

## List of Figures

Figure 1: A framework for understanding why challenging behaviours occur (Hastings et al., 2013) .....	9
Figure 2: Flow diagram showing inclusion/exclusion of studies identified during database search process .....	47
Figure 3: Timeline of pilot study intervention process .....	129
Figure 4. Average scores of procedural fidelity of behaviour support plan for John, Sarah and Claire.....	133
Figure 5: Occurrences of challenging behaviour each month for John and Sarah .....	135
Figure 6: Organisational Intervention Process.....	162
Figure 7: Average procedural fidelity levels of all behaviour support plans across settings .....	168
.....	169
Figure 8: Procedural fidelity levels of implementation of behaviour support plans across three different settings.....	169
Figure 9: Occurrences of hitting behaviour per week displayed by Charlie.....	170
Figure 10: Duration of time spent engaging in spitting behaviour during 45 minute observation period: Mark.....	171
Figure 11: Occurrence of SIB and appropriate functional communication responses displayed by Steven during 45 minute observation sessions .....	172
Figure 12: Occurrence or non-occurrence of SIB and appropriate communication response displayed by Alan during 45 minute observation sessions. ....	173
.....	174



Figure 13: Occurrence of aggressive behaviour per week, and engagement in meaningful activities per week displayed by Taran.....	174
Figure 14: Occurrence of hair-pulling behaviours displayed by Mary per week and number of times Mary accessed ‘quiet room’ per week.....	175
Figure 15: Occurrence of SIB during Robert’s transitions from house to bus .....	175
Figure 16: Frequency of removing clothes in communal areas displayed by Peter per week .....	176
Figure 17: Number of full night’s sleep per week .....	177
Figure 18: Weight (lbs) measured at slimming world meetings post-intervention .....	177
Figure 19: Comparison of average observational practice leadership scores (out of a total 25) pre-intervention and post-intervention across settings .....	178
Figure 20: Average staff self-efficacy scores across three settings .....	180
Figure 21: Comparison of average pre-consultation phase and post-consultation phase BSPQ-II scores across settings.....	181
Figure 22: Four-term contingency model for high fidelity of implementation .....	222

## List of Tables

Table 1: Key components of PBS (Gore et al., 2013) .....	17
Table 2: Search terms.....	46
Table 3: Primary quality indicators (adapted from Reichow et al., 2008).....	51
Table 4: Secondary indicators (adapted from Reichow et al., 2008 by Tomlinson et al., 2019) .....	52
Table 5: Guidelines for determination of research report strength ratings (Adapted from Reichow et al., 2008) .....	53
Table 6: Intervention codes and definitions.....	54
Table 7: Data Extraction Table .....	<b>Error! Bookmark not defined.</b>
Table 8: Intervention combinations and effect size .....	69
Table 9: List of identified themes and sub-themes .....	83
Table 10: Interventions used in pilot study.....	117
Table 11: Characteristics of primary participants ( $N = 8$ ).....	120
Table 12: Observational practice leadership scores pre-intervention and post-intervention.	136
Table 13: BPI-01 scores pre intervention and post intervention.....	136
Table 14: Job satisfaction and management style (Freeman scale) ratings ( $n = 6$ ).....	137
Table 15: Behaviour support plan ratings based on BIP-QE II scoring guide.....	139
Table 16: Interventions used in study .....	152
Table 17: Characteristics of primary participants ( $N = 52$ ) .....	155
Table 18: Target behaviours and measures for data collection for service user outcomes....	157

Table 19: Average Behaviour problems inventory-01 scores pre intervention and post intervention across settings .....	179
Table 20: Behaviour plan quality ratings and scores .....	182

**Summary list of abbreviations used throughout thesis (alphabetised)**

Abbreviation	Definition
AAIDD	American Association on Intellectual and Developmental Disabilities
ABA	Applied Behaviour Analysis
ADHD	Attention Deficit Hyperactivity Disorder
ASD	Autism Spectrum Disorder
BACB	Behavior Analyst Certification Board
BCBA	Board Certified Behaviour Analyst
BILD	British Institute of Learning Disabilities
BIPQ-II	Behaviour Intervention Plan Quality rating scale
BPI-01	Behaviour Problems Inventory
BSP	Behaviour Support Plan
BSP-QE11	Behaviour Support Plan Quality Evaluation Tool
BST	Behaviour Skills Training
CQC	Care Quality Commission
DOH	Department of Health
FBA	Functional Behaviour Assessment
FBAI	Functional Behaviour Assessment Interview
GP	General Practitioner
HIQA	Health Information and Quality Authority
HRB	Health Research Board
HSE	Health Service Executive
IABA	International Association of Applied Behaviour Analysis
ID	Intellectual Disability

---

IHREC	Irish Human Rights and Equality System
IOA	Interobserver Agreement
IRP-15	Intervention Rating Profile
IQ	Intelligence Quotient
IT	Information Technology
MO	Motivating Operations
NAO	National Audit Office
NAP	Non-overlap of All Pairs
NCMBD	Non-concurrent Multiple Baseline Design
NICE	National Institute for Health and Care Excellence
NIDD	National Intellectual Disability Database
OBM	Organisational Behaviour Management
ONS	Office for National Statistics
PBS	Positive Behaviour Support
PCP	Person Centred Plans
PIC	Person In Charge
POS	Positive pairs
PRN	Pro re nata
PSR	Periodic Service Review
RIDN	Registered Intellectual Disability Nurse
RNSN	Registered Nurse Sub-normality
SD	Discriminative Stimulus
SEN	Special Educational Needs
SESQ	Staff Experience and Satisfaction Questionnaire
SIB	Self-Injurious Behaviour

---

SWPBS	School-Wide Positive Behaviour Support
TBFA	Trial Based Functional Analysis
TBI	Traumatic Brain Injury
TIES	Tied pairs
WHO	World Health Organisation

## **Publications and presentations resulting from thesis**

### *Publications*

Brady, L., Padden, C., & McGill, P. (2019). Improving procedural fidelity of behavioural interventions for people with intellectual and developmental disabilities: A systematic review. *Journal of Applied Research in Intellectual Disabilities*, 32(4), 762-778.

Brady, L., Padden, C., & McGill, P. (2020). Positive behaviour support in residential services: Perspectives of frontline staff, management and clinicians on procedural fidelity. *Manuscript submitted for publication.*

### *Presentations*

Brady, L. (2019) *Increasing procedural fidelity of behavioural interventions: A pilot study.* Presentation, Division of Behaviour Analysis Conference, Dublin. Ireland.

Brady, L. (2019) *Positive behaviour support in residential services: Perspectives of frontline staff, management and clinicians on procedural fidelity.* IASSID conference, Glasgow, Scotland .

## Abstract

### *Aims*

Procedural fidelity refers to the extent to which an intervention is carried out as intended. The aim of this thesis was to explore how levels of procedural fidelity can be increased in residential homes for adults with intellectual disabilities. High procedural fidelity in human services is important as the stronger the fidelity levels, the more likely the intervention will be successful and the individual able to develop.

### *Methods and results*

Analysis of prior literature through a systematic review, highlighted that improving procedural fidelity levels is a largely under-researched area, with no previous studies conducted in residential care homes for adults with intellectual disabilities. Existing literature was mainly focused on children in more structured settings such as classrooms and clinics with no studies conducted in more unstructured settings such as residential homes. The initial study aimed to explore the issues confronting frontline staff, managers and clinicians when implementing behaviour support plans. Staff from five different organisations in Ireland were interviewed. Four main themes were identified: 1) Organisational culture; 2) Accountability; 3) Theory versus practice; and 4) There's nothing positive about behaviour support. These themes were used to tailor the intervention for a pilot study which was run in one group home in Dublin. The intervention employed behaviour skills training, practice leadership and a restructuring of behaviour support plans. It was found that behaviour skills training had a positive impact on procedural fidelity levels across all participants. The introduction of practice leadership increased procedural fidelity levels further and procedural fidelity levels remained higher than baseline for two of the three participants. The pilot study demonstrated the feasibility of the implementation of the intervention and their likely benefits.

The final study employed a more robust design, introducing behaviour skills training, practice leadership, group incentives and self-monitoring to improve procedural fidelity. The study took place across three residential settings. Procedural fidelity levels increased across all settings and for all behaviour support plans.

### *Conclusion*

Together the findings of the thesis display that procedural fidelity is both important and poorly understood in residential settings. Interventions to improve fidelity are possible and may lead to better outcomes for individuals with challenging behaviour. Implications for future research and practice are discussed.



## **Chapter 1: Introduction**

### **1.1 Thesis overview**

This first chapter outlines the definition and prevalence of intellectual disability (ID). An overview of the history of intellectual disability services is given to explain how current services and organisations have been put in place to support adults with ID. A definition of challenging behaviour is provided, along with a summary of the different models of challenging behaviour. A description of Positive Behaviour Support (PBS) and its development is provided with a definition that highlights the critical elements of quality positive behaviour support. Procedural fidelity is discussed in the context of different professions such as medicine, psychology and behaviour therapy. The importance of accuracy of implementation of different interventions and the challenges to achieving this across professions are highlighted. The gap in research of procedural fidelity in real-life settings is acknowledged, and the implications for individuals in receipt of Positive Behaviour Support services are discussed.

Chapter 2 reports findings of a systematic review of interventions. It was vital to gain a clear picture of the existing literature and evidence base to inform and guide the empirical work within the thesis. This systematic review highlighted a lack of research in adult services, with no focus on the behaviour of the clinician or manager in the delivery of behaviour support plans. Therefore, Chapter 3 details the impact of challenging behaviour on staff in human services, including these perspectives. A qualitative study is conducted, interviewing 15 staff members to determine challenges and barriers to high fidelity. A thematic analysis reveals areas where staff struggle with implementing behaviour support guidelines, and consideration of future research is discussed.

Chapter 4 describes the pilot study carried out to determine the feasibility of methods for the main study of this thesis. Methods and results of an intervention carried out in one group

home are outlined, and the efficacy and limitations of the intervention are considered. Chapter 5 includes a description of the intervention-based study which is the main focus of this thesis. The study design, participants, procedure, methods, data collection and measures are described. Results include pre-intervention and post-intervention data. The chapter concludes with a discussion of the relevance of the findings for future implementation of support plans in human services.

Chapter 6 discusses the overall results of all studies, including the systematic review, qualitative study, pilot study and main study. A range of relevant literature is considered in order to put the results into context. A model for the future delivery of PBS plans in human services is presented. The thesis ends with some final thoughts and tentative conclusions, both for the implication of PBS implementation and for future research.

## **1.2 Intellectual disability**

### *1.2.1 Terms and Definition*

There have been many different terms used to describe what we now know as ‘intellectual disability’. Until recently the terms ‘mental retardation’ and ‘mental handicap’ were used in the USA and UK respectively, but these are out of mainstream use now. The terms learning disability and intellectual disability are currently the principal terms used regularly. The term learning disability is much more common in service contexts in the UK, however the term intellectual disability is increasingly used globally in research contexts. As the term intellectual disability is used primarily in Irish research and policies, this thesis will use this term throughout.

Intellectual disability is characterised by impairments of both adaptive and intellectual functioning with an onset of age before 18 (American Psychiatric Association, 2013). Intellectual functioning refers to general mental capacity such as learning, problem solving and reasoning. One common way to measure intellectual functioning is with an IQ test. A score of

70 or less coupled with deficits in adaptive functioning will result in a diagnosis of intellectual disability (American Association on Intellectual and Developmental Disabilities [AIDD], 2010). Adaptive functioning refers to everyday life skills that are needed to live, work and play in the community. These include communication skills, home living skills, social skills, basic reading and writing, and health and safety skills, among others. The degree of ID can be mild, moderate, severe or profound with over 90% of those diagnosed falling within the mild range (Department of Health, [DOH] 2001).

### *1.2.2 Prevalence*

For several reasons, it is difficult to accurately report the numbers of people with ID. Firstly, the determination of the true incidence and prevalence of ID is complicated because researchers use various operational definitions and measures. Two different systems for classifying intellectual disability are used in the United States (American Associates on Intellectual Disability criteria and the Diagnostic and Statistical Manual of Mental Disorders, 5<sup>th</sup> Edition) (Boat & Wu, 2015) The previous DSM-IV manual included the IQ cut off (70 or less) as a critical aspect of diagnosis. In contrast, the current DSM-V places more emphasis on qualitative factors such as the age of onset, and challenges in adaptive and intellectual functioning which may have had an impact on some diagnoses during the transition phase. Secondly, some researchers and clinicians use the terms intellectual disability and developmental disability interchangeably meaning that conditions such as Autism Spectrum Disorder (ASD) and developmental language disorder may get mixed into the figures (Paul & Wang, 2011). Finally, it is likely many people have not received a diagnosis or are not known to services, particularly those who fall within the mild range of intellectual disability. As a result of this, administrative prevalence is much lower than the true prevalence.

In the United Kingdom, it is reported that 1.5 million people have an intellectual disability, of which 1.13 million were over the age of 18 (Office for National Statistics [ONS],

2019). Adults with an intellectual disability in the UK therefore represent 2.16% of the general population. In Ireland, the National Intellectual Disability Database (NIDD) was used until 2017 to report the prevalence of intellectual disability (This system has not been replaced with an alternative so up to date data is not available). The NIDD is a report which inevitably reflects the difference between the administrative and actual prevalence of ID as it only records details of individuals with access to services and does not take into account people who do not use services in the country. However, the most recent NIDD report from 2017 reports that there are 28,388 people with intellectual disabilities living in Ireland, which accounts for 0.6% of the population (Health Research Board [HRB], 2018). The 2016 Census reported much higher numbers with 66,611 people recorded as having an intellectual disability, accounting for 1.4% of the population. As such, it is very difficult to determine the true prevalence of intellectual disability, but it is clear that there are many people in Ireland and across the globe who require additional supports from services and specialised professionals

### **1.3 Challenging behaviour**

#### *1.3.1 Definition*

Challenging behaviour is extremely significant to the lives of many people with ID. Since behaviour is defined as acceptable or not acceptable in a particular social context, there is no universally acceptable definition of challenging behaviour. It is also shaped by broader environmental and cultural influences that determine how people interact with each other. Some behaviours may be completely acceptable in one situation and considered 'challenging' in another. For example, jumping up and down and shouting would be perfectly acceptable at a rock concert, but considered extremely challenging in a classroom setting or at dinner time. Challenging behaviours may manifest very differently in people with severe intellectual disabilities compared with mild or moderate intellectual disabilities.

Historically, some of the terms used to describe challenging behaviour were unhelpful with terms such as ‘problem behaviour’ and ‘difficult behaviour’ placing blame on the individual displaying the behaviour. Other terms such as ‘abnormal behaviour’ or ‘dysfunctional behaviour’ suggested there was something internally wrong with the individual displaying the behaviour. Finally, terms such as ‘maladaptive behaviours’ and ‘disordered behaviours’ incorrectly suggested that the behaviours were not functional for the person. Research has shown that these behaviours are usually very functional for the individuals and do not occur in a disordered manner (Carr, 1977). In order to move away from placing blame on the individual displaying the behaviours, the term ‘challenging behaviour’ was coined in the United States by The Association for Severe Handicaps (Royal College of Psychiatrists, 2007). The most recent, widely used definition of challenging behaviour in the UK is:

“Behaviour can be described as challenging when it is of such an intensity, frequency or duration as to threaten the quality of life and/or physical safety of the individual or others and it is likely to lead to responses that are restrictive, aversive or result in exclusion.” (Royal College of Psychiatrists, 2007).

The primary focus when defining a challenging behaviour is that it is putting the person or others in harm’s way or it is blocking them from a good quality of life by preventing them having access to educational or social interactions or work life. Challenging behaviour includes behaviours such as self-injury, physical aggression, property destruction, stereotypy, sexualised behaviours, disruptive behaviour and ritualistic behaviours (Emerson & Enfield, 2011).

### *1.3.2 Prevalence*

Estimates of the prevalence of challenging behaviour have shown considerable variation ranging from 11% (in a total population study) (Holden & Gitlesen, 2006) to 80% (in a long stay English institution) (Kiernan & Moss, 1990). A review conducted by Bowring,

Totsika, Hastings and Toogood (2019), reported that several studies which utilised psychometrically evaluated tools to create clear operational definitions of challenging behaviour found consistent estimates of the prevalence of challenging behaviour (18.1% to 18.7%). Bowring et al. (2019) concluded that while psychometrically evaluated tools were valuable in estimating the prevalence of challenging behaviour, further research is needed to determine how to use the tools in a representative, total population sample. An Irish Health Service Executive (HSE) report published in 2018 stated that 30.5% of adults with intellectual disabilities display behaviours that challenge. A widely cited figure is that reported by Lowe et al. (2007) and Emerson and Einfeld (2011) of 5% to 15%. This commonly accepted figure still has quite a lot of variation, which is likely due to different ways of measuring challenging behaviour and the same difficulties previously mentioned in ID prevalence studies, such as discrepancies in definitions, severity of ID and comorbidity of other conditions. While it is difficult to determine one specific prevalence figure due to these discrepancies, it is clear that challenging behaviour has a considerable impact on the quality of life for those individuals who are affected.

### *1.3.3 Impact*

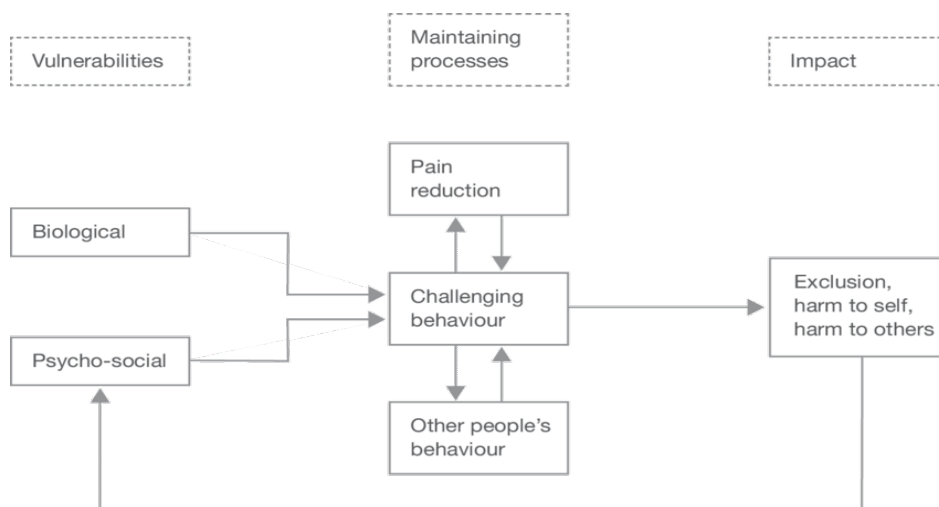
For adults with intellectual disabilities, challenging behaviour can have a significant negative impact on many aspects of their lives (Bowring et al., 2019). These areas include the increased risk of abuse due to prolonged long-term inpatient care (Glover & Olsen, 2012), increased reliance on restrictive practices (Royal College of Psychiatrists, 2007), physical injury to the person or his/her carers (NICE, 2015), poor integration and exclusion from social relationships, education and other community services (Cooper et al., 2009). Challenging behaviour has also been found to negatively impact the lives of the carers and staff supporting the individuals with behaviours of concern. These adverse effects include psychological distress and physical harm (Cooper et al., 2009). The impact on staff is one of the main reasons

that challenging behaviour is the most common factor related to placement breakdown within services (Emerson & Einfeld, 2011). Individuals who display challenging behaviour are more likely to be placed in out of area specialist behaviour units, resulting in less access to families and their communities (Emerson & Einfeld, 2011).

#### *1.3.4 Causal models*

Much of the research developed in the last 40 years, investigating the value or function of challenging behaviours for individuals who display them, was triggered and informed by a seminal paper by Carr (1977) which reviewed anecdotal reports and empirical studies. Carr (1977) summarised the existing literature, discussing various theoretical accounts, finally postulating that there are three possible motivations for self-injurious behaviour (SIB). The first motivation proposed is that behaviour may be maintained by positive social reinforcement. The second motivation, in contrast, is that behaviour may be maintained by negative reinforcement, meaning that the removal of an aversive stimulus may reinforce the behaviour. Finally, the third motivation proposed by Carr (1977) is that behaviour may be maintained by sensory stimulation. An understanding of the function of challenging behaviours from the individual's perspective is essential to the development of successful and appropriate interventions.

Hastings et al., (2013) outlined a broader causal framework of why challenging behaviour may occur in people with intellectual disabilities building on the work of Carr (1977) (see Figure 1). This framework included some biological vulnerabilities such as genetic factors, sensory problems or physical health problems, particularly those resulting in pain. Psychosocial vulnerabilities were also included in the framework as potential causes for challenging behaviour. They include adverse life events (such as previous abuse), lack of communication skills, little or no meaningful activities, sparse social networks and psychiatric or general mood problems.



*Figure 1: A framework for understanding why challenging behaviours occur (Hastings et al., 2013)*

Hastings et al. (2013) included ‘maintaining factors’ in the framework for causes of challenging behaviour stating the behaviours must be valuable to the individual and have a function if they continue to occur. These factors may be reducing pain or receiving interaction with other people. Hastings et al. (2013) also highlighted the impact challenging behaviours have on individuals, including exclusion and harm to self or others. These impacting factors can then lead to more psycho-social challenges which may exacerbate the behaviour.

Hastings et al. (2013) also highlighted the importance of understanding the carer’s behaviour when developing interventions for an individual’s challenging behaviour. Having a clear picture of the carer’s values and underlying beliefs is essential when developing appropriate guidelines or responses required for supporting people with challenging behaviour. Emerson and Bromley (1995) suggested that the belief systems of staff, which help them understand the causes of challenging behaviour, are vitally important. If their belief systems and understanding of challenging behaviour are not consistent with others supporting the



individual, this may prevent adequate support being delivered as treatment plans and supports are undermined.

### *1.3.5 Intervention*

The current NICE guidelines (National Institute for Health Care and Excellence [NICE], 2015) for supporting individuals with challenging behaviour, recommend the use of behaviour assessment, person-centred planning and behaviour support as the first approach. Unfortunately, there are often discrepancies between best practice and reality when it comes to intervention. Since the 1960s, behavioural approaches to treating challenging behaviour have come to the fore, with a growing understanding that environmental factors can influence behaviour, rather than the perception that challenging behaviour is a manifestation of internal pathology (Emerson & Einfeld, 2011). Around this period Applied Behaviour Analysis (ABA) became seen as an increasingly successful approach to supporting individuals who display challenging behaviour (Baer, Wolf & Risley, 1968). ABA is a science used to study and replace behaviours which cause individuals severe social problems with more appropriate and successful ones (Dunlap, Sailor, Horner, & Sugai, 2009). It is based on Skinner's research on operant learning and focuses on the relationship between the antecedents and the consequences of behaviour.

ABA predominantly uses single-case designs, in which each participant serves as their own control. Gast and Ledford (2014) describe a single case design as a research strategy where the main agenda involves searching for functional relationships between dependent and independent variables. They state that a single-system may refer to the behaviour of a person, a family or a community. ABA involves observations of target behaviours for change and encompasses scientific enquiry such as 'objective description, quantification and controlled experimentation' (Cooper, Heron, & Heward 2014, p.23). Controlled experimentation requires the clinician/therapist to identify environmental variables that influence the behaviours of

concern and develop a treatment/intervention for behaviour change that focuses on those variables.

In its original form, ABA used a variety of non-aversive and aversive techniques. Aversive techniques in this context referred to approaches that were painful, unpleasant or demeaning to the individual. The terms ABA and behaviour modification were used interchangeably. As research was in its early stages, behaviourists used the technology available to them at the time to treat behaviours of concern, and the approaches may not have been entirely ethical or informed. Iwata (1988) described how in these earlier years, to decrease self-injurious behaviour, behaviourists may have delivered aversive stimuli or provided a reinforcer contingent on the response without identifying the most motivating reinforcer. While the interventions may have been successful, it was not uncommon, mainly when an aversive stimulus was provided, to see the appearance of other aberrant or unwanted behaviours such as increased aggression and extinction bursts (Iwata, 1988). McConnachie and Carr (1997) also identified a phenomenon known as ‘child effects’ which occurred when the teacher/carer experienced a punishing effect by conducting the intervention. As the interventionist was uncomfortable with the practice due to low social validity, they were less likely to follow through with high fidelity. Carr (1977) led the way in developing a functional analysis of behaviour, providing a theoretical framework which involves a technology to determine the function of a person’s behaviours of concern. By providing a method to understand the motivation for challenging behaviours, it was possible to design interventions scientifically to change behaviour in a desirable direction.

In 1982, Iwata, Dorsey, Slifer, Baumann and Richman, published their seminal paper, “*Toward a Functional Analysis of Self-Injurious Behaviour*” which outlined a simple format that could be used to scientifically determine whether a behaviour was maintained by positive reinforcement, negative reinforcement or self-stimulation. Iwata et al. (1982) demonstrated that

particular topographies of behaviours do not have singular causes, but instead may have different functions for different individuals. This paper marked a pivotal shift in the delivery of behaviour analysis. The field was able to move away from aversive interventions and provide evidence-based interventions with a focus on reinforcement and skill teaching. While this original functional analysis format is considered robust and can provide experimental control over behaviour (Iwata et al., 2000), some alterations to the basic format have been researched to accommodate a variety of different behaviours, setting and functions. Due to ethical concerns caused by the functional analysis requirement to evoke certain behaviours, Functional Behaviour Assessment (FBA) was developed to provide a hypothesis of the function of certain behaviours. FBA includes the use of interviews, questionnaires and observations to aid identification of problem behaviour. While these methods have proven to be useful to clinicians as they are less time consuming and more readily available than a full functional analysis, they are likely to have variable reliability and validity (Gresham, 2004).

Despite the best practice guidelines (NICE, 2015) and the availability of evidence-based behavioural technologies, recent research has found that medication and physical interventions such as exclusion or physical restraint are still extremely prevalent in the treatment of challenging behaviour (Glover, Bernard, Branford, Holland, & Strydom, 2014; Sheehan et al., 2015). A study conducted by Sheehan et al., (2015) investigated the prevalence of mental illness in individuals with ID in the UK and explored the prescription of psychotropic medication in this population. They found that more than one-third of the population included in the study had a record of mental illness, including one in ten who were recorded as having severe mental illness. However, the prescription of psychotropic drugs within the intellectual disability population was much higher than the recorded rate of psychotropic morbidity. More than two-thirds of the population in the study had a record of psychotropic drugs, and more than one-quarter of the population had been prescribed antipsychotic medication. The study

also identified that challenging behaviour was found to be independently associated with the prescription of antipsychotics, meaning that these medications were being prescribed ‘off-label’ to treat the symptoms of challenging behaviour.

‘Off-label’ refers to the use of medications outside the purpose they received approval for. Glover et al., (2014) proposed several reasons that psychiatrists and GPs may prescribe antipsychotics for challenging behaviour, even when no mental illness is recorded. These include the demand for the immediate alleviation of the symptoms of challenging behaviour in order to avoid placement breakdown. This typically involves the prescription of sedative type medication which can be delivered as required often called ‘PRN’. Another justification for prescribing these medications may be that more acute physical interventions such as restraint and exclusion create many ethical and legal questions and are also open to high levels of abuse if not appropriately monitored. The move to community settings and the social model of disability make these physical interventions much less acceptable. Finally, behavioural interventions can be costly and may be a burden on already strained resources. The effect of behavioural intervention is rarely seen immediately so where staff and carers perceive a need to change behaviour quickly, the use of medication as an intervention may be more likely. However, there is an interest and desire to use behavioural interventions among the psychiatric community. Unwin and Deb’s (2008) survey of psychiatrists suggested that non-pharmacological interventions are the preferred first-choice treatment for challenging behaviour. If behavioural interventions are unsuccessful, then pharmacological intervention would be considered if the frequency or severity of the behaviour warranted it.

## **1.4 Positive Behaviour Support**

### *1.4.1 History of Positive Behaviour Support*

Positive behaviour support came to the fore in the 1980s and 1990s and is widely regarded as a response at this time to the debate about the use of aversive and restrictive

techniques (Allen, James, Evans, Hawkins, & Jenkins, 2005; Singer & Wang, 2009). Human rights movements and values-based approaches such as social role valorisation and person-centred planning were critical to the development of the values and principles of PBS. LaVigna and Donnellan (1986) established the framework for a non-aversive and educative approach to treating behaviours of concern. The focus of their approach was on comprehensive Functional Behaviour Assessment (FBA), multi-element programming, emergency management and staff consistency in an intervention. It was with the commitment to improve the quality of life of vulnerable people that PBS was created (Singer & Wang, 2009).

PBS grew from the principles of ABA, and its initial definition by Horner et al. (1990) included nine main characteristics. The characteristics included an emphasis on lifestyle change; the use of functional analysis; the use of multi-component interventions; environmental manipulations; antecedent control; skill teaching; effective reinforcement; minimising the use of aversive procedures and utilising proactive and reactive approaches (Horner et al., 1990).

Anderson, Albin, Mesaros, Dunlap and Morelli-Robbins, (1993) promoted a model of PBS that moved away from more specialist-led approaches towards a more Person Centred Planning (PCP) model. They advocated involving a range of stakeholders in the development of support plans for individuals with challenging behaviours. Stakeholders might include direct care staff, family, friends and other professionals. They also advocated including the individual themselves if possible, in what was a clear move away from the 'expert' led ABA approaches. PBS models support 'end-users' such as carers and direct staff carrying out the direct interventions and perhaps conducting functional behaviour assessments following training from a behaviour specialist.

Carr (1996) released a paper detailing why behaviour analysis needed to evolve in order to survive as a science and be able to continue to support individuals with challenging

behaviours. Carr (1996) outlined how language needed to change from phrases such as 'behaviour modification' and 'environmental engineering' as critics likened these terms to Fascism. The explanation of behavioural principles such as using reinforcement to increase the future probability of behaviour could be interpreted as manipulating or controlling. Carr (1996) advocated using language focused on client dignity, compassion and honesty to make the science more attractive to the general population.

Horner (2000) suggested that PBS had evolved so far from ABA that there was no longer a need for comparison of the two practices. He described PBS as having a focus on much larger outcomes for the lives of the people involved, which in turn caused an expansion of the technologies available in order to meet these broader lifestyle outcomes. Examples of these newer technologies included multi-intervention approaches across a range of environments and contexts which are relevant for the individual, as well as the commitment to contextual fit and including staff, family and other important people in the process.

In 2002 Carr et al., produced what is regarded as the seminal definition in an article where characteristics of PBS were specified and defined. A set of nine characteristics were added to the more technology-based definition of Horner et al. (1990), and although they referred to functional analysis and ABA technology, the focus within the definition was on values: lifespan perspective or a long-term focus; ecological validity and the use of PBS in real-life situations; stakeholder participation, with stakeholders providing valuable perspectives; social validity, emphasising good fit of interventions and acceptability of interventions to stakeholders; systems change in order to allow behavioural change to occur; emphasis on prevention and proactive approaches; flexibility concerning scientific practices and willingness to utilise other theoretical perspectives. Although many of these elements, such as social validity and stakeholder views, long-term focus, and the need for system-wide change, were present in ABA literature (Baer et al., 1968; Baer & Wolf 1987; Wolf, 1978), their

emphasis, and the priority given to them by Carr et al. (2002), moved PBS into a more obviously separate category from ABA. As the authors put it, PBS ‘evolved beyond the parent discipline to assume its own identity’ (p.5). This remains an area of continuous debate however, as many would argue that PBS is essentially the same modern ABA practice, only with a more popular brand name (Horner, 2000).

The most recent definition of PBS comes from Gore et al. (2013, pp.13) who define PBS as: “a multi-component framework

- (a) developing an understanding of the challenging behaviour displayed by an individual, based on assessment of the social and physical environment and broader context within which it occurs ;
- (b) with the inclusion of stakeholder perspectives and involvement;
- (c) using this understanding to develop, implement and evaluate the effectiveness of a personalised and enduring system of support ;
- (d) that enhances the quality of life outcomes for the focal person and other stakeholders.”

PBS can be implemented in several different settings such as residential homes, schools and family homes with adults, young people, children, people with intellectual disabilities, people with emotional and behavioural difficulties and people with other neurological conditions such as acquired brain injury. It can be implemented on a case by case basis by a single clinician, by a more extensive professional team and through system-wide approaches such as those used in school-wide positive behaviour support (SWPBS) (Gore et al., 2013). While PBS can be available in many settings, with many different clients and by different types of practitioners, Gore et al. (2013) outline a core set of ten dimensions that must be present in combination for intervention or for a set of supports to be defined as PBS. These dimensions

divide into three categories: values, theory and evidence base, and process. A summary of these categories and the dimensions included is outlined in Table 1.

Table 1: Key components of PBS (Gore et al., 2013)

Values	1. Prevention and reduction of challenging behaviour occurs within the context of increased quality of life, inclusion, participation, and the defence and support of valued social roles
	2. Constructional approaches to intervention design build stakeholder skills and opportunities and eschew aversive and restrictive practices
	3. Stakeholder participation informs, implements and validates assessment and intervention practices
Theory and evidence base	4. An understanding that challenging behaviour develops to serve important functions for people
	5. The primary use of applied behaviour analysis to assess and support behaviour change
	6. The secondary use of other complementary, evidence-based approaches to support behaviour change at multiple levels of a system
Process	7. A data-driven approach to decision making at every stage
	8. Functional assessment to inform function-based intervention
	9. Multicomponent interventions to change behaviour (proactively) and manage behaviour (reactively)
	10. Implementation support, monitoring and evaluation of interventions over the long term

It is this final dimension described by Gore et al. (2013) (Implementation support, monitoring and evaluation of interventions over the long-term) that is the key focus of the current thesis. Gore et al. (2013, pp 20) state that “a plan is just a document consisting mainly of words on paper.....A plan is not an end in itself; rather, it is a device to guide implementation of what is usually a complex intervention.” It is the monitoring of the plan and the level of procedural fidelity with which the plan is carried out that will ensure quality PBS is provided. Without this crucial dimension, one cannot be guaranteed that the supports described are what is being delivered.

#### *1.4.2 Limitations and effectiveness of positive behaviour support*

Positive behaviour support has not been without criticism throughout its development and growth. Johnston, Foxx, Jacobson, Green and Mulick, (2006) discuss how some of the



significant characteristics of PBS make it a less robust approach than ABA. Issues highlighted include the emphasis on interventions that involve manipulations of antecedent stimuli. While Johnston et al. (2006) acknowledge that PBS does support the importance of consequences, they argue that the emphasis on antecedents may be detrimental to intervention planning as the complexities of the three-term contingency are not understood correctly by untrained carers. PBS has successfully been established as a brand name and disseminated as a service delivery model in schools and intellectual disability services. In order to achieve this, it was necessary to present an intervention model that is relatively non-technical, so that service providers without formal training would adopt it. This system provides a challenge for clinicians and frontline staff who may be delivering supports which they do not entirely understand (Huberman & O'Brien, 1999).

Additionally, the PBS focus on behavioural supports can provide a barrier for the individuals receiving the supports. These interventions involve adjustments to the environment to accommodate the individual's disabilities and current needs. Foxx (2005) highlighted that in large organisations, maintaining these supports may be useful in the short term. However, they tend not to require any change in behaviour or skill level in supporting staff. The critique that PBS may be more of a 'sticking plaster' rather than a permanent solution if done incorrectly has been raised. Johnston et al. (2006) discuss the tension created amongst clinicians and direct care staff by having a focus on manipulating environments rather than teaching skills. There is concern that these supports may create service user dependency rather than achieve the desired outcome of independence and high quality of life. While skills teaching is a vital part of PBS, direct care staff may shy away from these elements as more specialised knowledge of how to teach individuals is needed. Manipulating external supports does not require much technical understanding so that it may be preferable to some.

In response to these criticisms, LaVigna & Willis (2012) conducted a literature review to address concerns about using PBS to treat severe challenging behaviour. One concern addressed was that PBS is not effective when treating particularly severe or challenging behaviour. They identified several studies which showed the reduction of the occurrence of severe challenging behaviours and also studies which were able to address the severity of episodes of challenging behaviour. LaVigna & Willis (2012) also address the benefits of only using antecedent based strategies for some individuals particularly those with traumatic brain injury (TBI) who may have short term memory loss or challenges with impulse control. They argue that a consequence-based intervention would not be beneficial for these individuals, so the careful manipulation of environments will have a much better long-term outcome. This would suggest that highly trained clinicians may not be essential for further skills training for these individuals if the frontline staff can continue to maintain therapeutic and supportive environments.

In support of this finding, studies have also addressed the criticism of needing highly skilled and trained staff with degree-level qualifications in behaviour support to deliver PBS interventions effectively. LaVigna, Christian and Willis (2005) reported that a ‘trainer of trainers’ model was highly successful in disseminating PBS skills and knowledge across a large organisation. There was no difference in the quality of assessments and plans developed by those trained by the primary trainers or those trained by the second-generation trainers. These studies would suggest that PBS can be disseminated effectively and delivered by those who receive ongoing training in human services. It would be logical to suggest that consistent, quality PBS implementation should be available for individuals with challenging behaviours, living in residential services if correct training and resources are available to the staff. However, in many circumstances, this is not the case.

## **1.5 Service provision**

Many people with challenging behaviour find it difficult to source services that can meet their needs. The provision of services to individuals with challenging behaviour has a dark history with reports of serious abuses continuing to be released around the globe. It will be essential to reflect on the development of service provision for people with intellectual disabilities and challenging behaviour to gain a clear picture of how residential services have come to use their current policies and practices. As the current research takes place in Ireland, the development of services and policies for individuals with intellectual disabilities in Ireland is focused on here.

### *1.5.1 History of disability services in Ireland*

The face of intellectual disability in Ireland has changed considerably through time. Historically, individuals with ID were stigmatised, treated with fear and suspicion and often mistreated and abused. They were not segregated from the community but cared for by their own families as best as they could be (Quin & Redmond, 2005). In the early 18th century, Ireland began to develop health provision and welfare, which was delivered to the ‘sick poor’ including orphaned children and people with disabilities (Harvey, 2007). The superstitions and fears associated with individuals with disabilities were replaced with an attitude of pity and a view that people with intellectual disabilities needed to be separated from society for their safety. Religious orders and the state began to play a more predominant role in the care of individuals with IDs from the mid-nineteenth century (Considine & Dukelow, 2009) with people being moved from their homes in the community to larger group homes (predominantly workhouses) under the ‘Poor-law’.

It became clear that living in workhouses with criminals, people with severe mental health issues, and the elderly was not a suitable environment for individuals with ID (Ashton, 1977). However, in the late 19th century and early 20th century in the Irish state, funding for

health services was not a priority (Harvey, 2007). It became the responsibility of religious orders and voluntary services to make provision for people with ID through residential homes (Sweeney & Mitchell, 2009). The voluntary organisation 'Stewart's hospital' and religious orders including the Brothers of Charity, Daughters of Charity and Sisters of Charity led the way in establishing purpose-built residential, institutional services for individuals with intellectual disabilities, with mainly untrained members of religious orders and unmarried women working in the hospitals and institutions. These original organisations, established as long ago as 1869, remain leading service providers in support of individuals with intellectual disabilities in Ireland, albeit the nature of the services provided has changed considerably.

Through the first half of the 20th century, organisations began to become more structured and systematic in their care of people with intellectual disability. Psychiatrists, nurses and medical doctors took a lead role in many of the provisions. In Ireland, the nursing profession developed a separate qualification - initially Registered Nurse Sub normality (RNSN) before becoming known as Registered Intellectual Disability Nurse (RIDN) in 1959 (Doody, Slevin & Taggart, 2012). The qualification emerged as services began to move away from the medical to a more social model of disability. An emphasis was placed on training nurses how to teach and educate people with intellectual disabilities and to improve their environment and quality of life. The necessity of having specialised intellectual disability nurses involved in support of individuals with intellectual disabilities remains a cause for much debate in Ireland due to the move towards community settings. However, in 1959, this development was a significant progression in how individuals with ID would be supported (Doody et al., 2012).

It was not until the late 1950s to early 1960s that more voluntary groups became involved in the provision of supports for adults with intellectual disabilities. Parents of people with special needs began to set up their own smaller groups in their communities as they

became disenchanted with the institutional settings (Quin & Redmond, 2005). There was a political and public understanding that community care was more humane than institutional settings as well as being more cost-effective. Over the second half of the 20th century, several secular, non-governmental organisations were set up such as Enable Ireland, Stepping Stones, Prosper Fingal and Gheel Autism Services, to name a few. These services opened residential homes in smaller settings in people's communities.

In 2009, Ireland's Value for Money report kick-started a significant shift in disability policy in Ireland. The report highlighted a focus on group-based service provision and recommended a migration to a person-centred approach with a focus on individual supports (DOH, 2012). The report also stated that these essential changes to service delivery, which would require more resources, staff training and access to activities in the community, must be done with no additional funding and without recruiting any new staff. The disability sector was at this time subject to a moratorium on staff recruitment due to austerity measures in Ireland. As a result, staff were required to undertake additional duties, go through training and change their practice, leading to burnout, stress and reduced buy-in to the new policies.

In 2011 the HSE published 'Time to move on from Congregated Settings: a strategy for Community Inclusion'. This report provided some clarity about how to provide more person-centred services. The primary focus of the report was defining congregated settings (i.e., a house where ten or more people with disabilities live) and setting out a timeline for transferring all people from congregated settings to community settings. The report recommended that services reallocate current funding to provide for the training and resources needed to migrate people from congregated settings to the community successfully. Another recommendation was that services sell currently owned land and property to fund the transition period. The transition of all service users to the community was due to be completed by a

deadline of 2018. Unfortunately, this deadline has not been met with a total of 2,136 people still living in congregated settings in Ireland (HRB, 2018).

A policy directed towards day service providers, published in 2012 under the title 'New directions' outlines twelve supports that people who attend day services should have access to every day. The supports aim to develop autonomy, access to education, choice, community inclusion and high-quality governance. In 2016 standards relating to the new directions policy were published. However, a report on the success of these supports across day services in Ireland will not be available until 2021.

Finally, in 2013 a quality and standards body was established to regulate the provision of services in residential homes for adults with intellectual disabilities: The Health Information and Quality Authority (HIQA). The initial focus of HIQA inspections has been on health, safety and governance regulations (Department of Justice and Inclusion, 2017). There was a focus on paperwork relating to fire safety, medication management, security and hygiene. While these are extremely important to ensure a safe environment, staff focus moved away from the 2011 congregated settings policy, and the person-centred values highlighted in the unregulated New Directions policy from 2012. A continuing moratorium on hiring staff in the disability sector along with limited funding meant that staff prioritised meeting standards for a regulated set of guidelines. There was concern that if the standards for HIQA were unmet, it could result in the closure of the service. In 2017 the Irish Human Rights and Equality System (IHREC) used HIQA reports and findings to criticise current institutions in Ireland. They stated that HIQA has been able to establish that chemical restraint is practised regularly in residential services in Ireland as well as the use of extensive environmental restraints such as locked doors and high fences. Although HIQA continues to conduct regular inspections of residential services, the standards are not focused on positive supports and skills teaching, but mainly behaviour management and safeguarding. The report raised concerns that the absence of standards or

inadequate standards in a range of services, may mean that Irish services are not conforming to the European Social charter.

### *1.5.2 Behaviour Support in Ireland*

The 2007 Health Act in Ireland mandated Positive Behaviour Support (PBS) as the best practice to support individuals with intellectual disabilities. The HIQA standards also advocate for the use of PBS in supporting individuals with behaviours of concern in their homes. Traditionally in Ireland, due to the nature of intellectual disability service history, the science of behaviour change has been embedded in several different professions including nursing, education, psychology and social care. An audit conducted by Martin (2015) examined the professional affiliations of individuals employed as behaviour practitioners across Ireland. Thirty-eight per cent were members of the Psychological Society of Ireland (PSI), 20% were aligned with the Behaviour Analyst Certification Board (BACB), 18% were registered with An Bord Altranais (Nursing), 6% were registered with the Teacher's Union, and an alarming 27% of practitioners were not registered with any professional body at all. As a result, there are no minimum standards set for the provision of behavioural services and who should be employed to deliver them. There are currently no minimum requirements to be a behaviour specialist in Ireland, meaning many different professionals are working under the umbrella model of Positive Behaviour Support, with varying levels of training and experience with this practice. This varied delivery of PBS at the entry-level into services undoubtedly has an impact on the consistency and quality of supports provided.

It is important to note that while the governing bodies and overarching policies do not require specific qualifications for individuals providing behaviour support, the BACB certificants registry reports that there are currently 165 BCBA's working in Ireland. When examined in terms of population density, this is relatively high in comparison to the United Kingdom which currently has 417 Board Certified Behaviour Analysts (BCBA). There are 1/3

of the number of BCBA's working in a country with 1/12<sup>th</sup> of the population. This would suggest that while the profession is not fully recognised currently in Ireland, there are many highly qualified practitioners within the country. Ireland was also an early adopter of PBS practices and training with organisations such as The Callan Institute and Stewart's hospital developing multi-element behaviour support policies following early influential research from individuals such as Brian McClean and Ian Grey (Grey, McClean & Barnes-Holmes, 2002; Mc Clean et al., 2005; Grey, Hastings & McClean, 2006). ABA was also beginning to be widely disseminated in the late 1990's and early 2000s with the Institute for Applied Behaviour Analysis (IABA) international conference being held in Dublin in 2005 and the state funded Applied Behaviour Analysis pilot scheme wherein 13 ABA pre-schools were set up in Ireland (ABA Schools working group, 2010). Following the economic crash in 2009, state funding for the pilot scheme of the ABA preschools was withdrawn and the dissemination of ABA and PBS in Ireland slowed. The application of ABA in preschools and PBS in adult services is starting to increase gradually again and the ABAI conference is scheduled to take place in Dublin in 2021 and the International Precision Teaching conference is due to take place in Galway in 2022. The return of these international conferences to Ireland would suggest that the proliferation of ABA and PBS in Ireland is growing.

While Ireland has seen a significant improvement in how to provide support for individuals with intellectual disabilities and challenging behaviour, several issues are still prevalent. While the move from large institutional settings to community placements has been progressing steadily, elements of institutions remain as services are unable to source suitable housing and resources for all individuals. As a result, individuals with more severe disabilities remain in nursing-led residential services as this is the most economically viable way to ensure their physical needs are met. Unfortunately, this also means that the individuals at highest risk of displaying challenging behaviour are living in an environment that is likely to be a trigger



for challenging behaviour, making positive behaviour intervention extremely challenging from the outset. This, coupled with the heterogeneous backgrounds and qualifications of behaviour specialists, psychologists and frontline staff may mean that the desire to implement PBS is stymied somewhat and more support may be required in residential services to ensure interventions can be carried out correctly.

## **medical 1.6 Procedural fidelity**

### *1.6.1 Terms, definition and purpose*

There are several terms used across several different professions to describe procedural fidelity. Terms such as treatment integrity, treatment fidelity, intervention adherence, intervention reliability, treatment implementation, treatment delivery and medication adherence appear in behavioural, medical and psychological research (Barnett et al., 2014). As ‘procedural fidelity’ is the term most commonly used in behavioural research, this term will be used throughout this thesis. Procedural fidelity refers to the degree of accuracy with which an intervention is carried out as directed and is essential to the delivery of evidence-based practice (Breitenstein et al., 2010).

The collection of procedural fidelity data in research serves three primary functions (Wolery, 1994). The first function is to have a systematic means of monitoring the occurrence of relevant variables in the intervention. These may include the occurrence of the independent variable. This monitoring is essential for the researcher to detect any changes in implementation, setting events or human error that may require further training. This function is also extremely relevant for practitioners who can identify a change in the environment or setting that can be supported quickly to ensure the intervention is in place. The second function laid out by Wolery (1994) is to provide evidence that the experimental conditions occur as planned. Evidence is valuable in research as it will allow future researchers to replicate the study as fine detail of the original study is provided. It is also valuable in practice as clinicians

can use precise data to determine if an intervention is working or not. Finally, Wolery (1994) describes the third function as providing information to practitioners about the use of interventions. By monitoring procedural fidelity levels of different interventions closely, researchers can provide practitioners with more details about interventions such as those that have a degree of flexibility in how they are implemented and those which must be extremely rigid. Wolery (1994) describes a time-delay procedure which was found could be implemented with low and high fidelity and still produce positive outcomes for participants. In another study, they found a controlling prompt must be delivered with high fidelity in order to have a positive learning outcome for participants. These finer details that can be observed through procedural fidelity monitoring are invaluable to clinicians who can ensure training and focus is on the essential parts of interventions. Procedural fidelity is considered to be a major factor in behavioural research, is listed as one of the six standards for single-case research by Horner and Kratochwill (2012) and is included in a list of essential features for special education research by Gersten et al. (2005).

### *1.6.2 Medication adherence*

There is broad agreement that ensuring accurate implementation of interventions is an extremely challenging and complex task, more than can be addressed with written plans and policies. Fidelity of interventions is not a challenge faced only by the behavioural research community. Authors of programmes and interventions in other professions face similar difficulties ensuring that treatments and plans found to be clinically sound translate to real-life settings with accuracy and fidelity. Medication adherence is one of the most well-researched areas of fidelity. There is potential to learn from this research in order to understand the potential barriers and solutions to procedural fidelity of behavioural interventions.

Medication adherence, defined by the World Health Organization (WHO) as “the degree to which the person’s behaviour corresponds with agreed recommendations from a

health care provider” (Sabate, 2003, p.3) poses a significant challenge to the medical profession with adherence to chronic medications estimated at 50% (Kim, Combs, Downs & Tillman, 2018). Medication adherence usually refers to how closely patients follow their doctor’s prescription guidelines. It involves factors such as getting prescriptions refilled, taking medication at the correct time during the day and having a clear understanding of the directions required to take the medication competently, e.g., whether needles or other specialist equipment are required (Ho, Bryson & Rumsfeld, 2009).

Medication non-adherence is of growing concern not only to clinicians whose patients are not receiving adequate treatment, but also health care systems and taxpayers who continue to provide support for people who are not getting any better (Ho et al., 2009). A review of medication adherence in the United States found that non-adherence to medication can account for up to 50% of treatment failures, up to 125,000 deaths and approximately 25% of hospitalisations each year (Bosworth, 2012). Kim et al. (2018) report that there is little concern about the delivery of medication in hospital settings as there are transparent and accountable processes in place to ensure patients receive medication as directed. It is when patients live in the community with several extraneous variables and distractions that the adherence to medication begins to fall.

A qualitative study conducted by Kvarnstrom, Airaksinen and Liira (2018) carried out four focus groups with 16 General Practitioners (GPs) in southern Finland to explore insights into medication non-adherence and ways to overcome the problem. The group identified several critical issues, including the challenges of providing medication to an ageing population. As people grow old, they will be more likely to take a more extensive combination of medications which can be complex to manage. This, coupled with the differences in skills, needs and educational backgrounds of patients, made it difficult for GPs to ensure all patients can self-manage their medications.

Another area highlighted as a potential barrier to medical adherence was the authoritative role that doctors have in the community (Kvarnstrom et al., 2018). The GPs reported that they felt patients often tried to please them by saying they were taking their medication and were not able to speak up about any challenges they were facing. Similarly, they felt that side effects reported on medication packets might put people off taking prescribed medication. However, patients would not discuss these concerns with the GP and, instead, simply not take the medication. Practical challenges discussed included the difficulties with Information Technology (IT) systems and recording patients' medications accurately. Time and resources were also reported as harming adherence as GPs felt they were often not able to educate the patient properly about the importance of the medication and the prescription guidelines.

Finally, GPs highlighted practices which they believed improved the adherence levels. The main recommendation was a collaboration with the patient. GPs reported including patients at the centre of their care increased the likelihood they would follow through with guidelines due to a sense of ownership over their medication. Developing rapport and maintaining a long-standing relationship with patients was also highlighted as an indicator for high adherence as patients were more likely to give reliable feedback to their GP. The GPs also suggested that to improve the motivation, self-management and access to information, a collaboration between pharmacists and GPs would be beneficial.

Many other interventions have been highlighted as successful in improving medication adherence for individuals living independently in the community. These include regular face-to-face time with pharmacists for individualised education and counselling (Taitel, Jiang, Rudkin, Ewing & Duncan, 2012); prompts to take the medication in the form of text messages set up either via computer programmes or as personalised texts from clinics (Thakkar et al., 2016); simplifying guidelines; providing medication in pre-packed daily pillboxes; and

ensuring ongoing communication (Kim et al. 2018). Kim et al. (2018) also discuss the importance of the role of the pharmacist in adherence to medication. They highlight that pharmacists are more easily accessible to members of the community, have expert knowledge of medication and can provide ongoing education and support. Kim et al. (2018) recommend that pharmacists track data for each patient such as adherence levels, clinical outcomes, savings, patient perceptions and team perceptions and share these periodically with the patient as positive reinforcement for their efforts.

Another crucial area for adherence in the medical world is checking that the practitioners adhere to guidelines themselves. An example of this is the WHO surgical safety checklist (World Alliance for Patient safety, 2008) which is a checklist used globally to ensure patient safety during surgery. The purpose of the checklist is to help teams communicate and avoid 'never' events such as leaving surgical instruments inside a patient or performing surgery on the wrong part of the body (Vogel, 2017). The checklist is divided into three sections (before induction of anaesthesia, time out and sign out) which must be completed before the next stage can take place. Each section represents an essential stage in the surgery process, and the entire team in the Operating Room must take part in the checklist at each stage. Items which are checked for include patient's identity, allergies of the patient, name of each person in the room, procedure taking place, instrument check and equipment check.

Schwendimann et al. (2019) conducted a study in a Swiss academic centre to ascertain the level of adherence to the WHO surgical checklist within the hospital's operating rooms. They collected data through structured interviews with operating room team members and on-site observations of the use of the WHO safety checklist in 104 operations. They found that the adherence to the 'time out' portion of the checklist was between 96 and 100% across all operations and was 22% in the sign out part of the checklist. The suggested reason for the low adherence for the sign out portion was that team members would leave the room before or

while the checklist was being conducted. It was noted that during the observations if the lead surgeon left early, other members of the team were more likely to leave the room before completion of the checklist, suggesting that the behaviour of the most senior member of the team had an impact on the adherence to the checklist. Vogel (2017) reported a case where an anaesthetist left the operating theatre without telling anyone, and the patient became conscious during the operation, able to hear and feel everything, but unable to move or alert the team to what had happened.

Schwendimann et al. (2019) also reported that interviews with the operating team members suggested that influential specialists (such as lead surgeons, senior anaesthetists) who advocated the use of the checklist and modelled excellent communication and teamwork would ensure a more precise team focus on the same. In contrast, staff insecurity, lack of teamwork, hesitancy to complete the checklist, or a senior team member with a negative attitude toward the checklist were all factors likely to contribute to it not being completed. Other barriers to use were also highlighted, such as having to prioritise other elements for the surgery, the room being too busy/small for everyone to stand around and listen, too much noise, the checklist including irrelevant things or a waste of time. There are apparent similarities between the challenges in medical adherence of guidelines carried out by patients and guidelines carried out by practitioners. Buy-in, time, resources, organisation levels, understanding of the task, communication, rapport, and influence of authority figures all can influence whether a guideline or task will be carried out by the individual patient or practitioner. These findings will be valuable when exploring challenges in the human service environment that make it difficult for staff to implement support plans accurately.

### *1.6.3 Implementation science*

Establishing new evidence-based practices is an infamously tricky thing to do (Bauer & Kirchner 2020). Studies indicate that it can take 17-20 years to get new clinical practices

established in western healthcare systems (Grant, Green & Mason, 2003). This is not a new phenomenon, driven by our fast-paced society's inability to absorb new information. It has been a challenge for centuries. An example of an unwillingness to change practice is that of the British Navy's understanding of how to treat scurvy. It was initially noticed that citrus cured scurvy in 1601. In 1747 the first randomised control trial found this observation to be scientifically valid. However, the British Navy did not adopt the routine use of citrus to prevent scurvy until 1795, and the British merchant marine did not adopt the practice until 1865 (Mosteller, 1981).

As researchers, clinicians and health care workers have been aware of the problem of non-adoption of evidence-based practices; the area began to form as a sustained field of study known as implementation science in the 1960s (Bauer & Kirchner, 2020). Implementation science is defined as "the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices and, hence, to improve the quality and effectiveness of health services." (Eccles & Mittman, 2006). The focus is not to establish the impact of the intervention, but identify how to effect its uptake into regular use by frontline staff.

A key feature of implementation research is the focus on ongoing evaluation of the process. To monitor fidelity levels in context, researchers use formative evaluation whereby they feed data collected back to the team and staff in the study so that they can adapt and improve the process of implementation as the protocol is ongoing (Bauer, Damschroder, Hagedorn, Smith & Kilbourne, 2015). Unlike in efficacy and effectiveness design studies, participants in implementation trials are not trained to criterion. However, they receive ongoing feedback to improve their skills and adapt the context to fit the evidence-based practice.

In recent times with the outbreak of the COVID-19 virus across the globe, implementation science and behavioural science have had a considerable role to play in

introducing new behaviours and interventions to the world (West, Michie, Rubin & Amlot, 2020). People have been required to alter their behaviours in massive and unprecedented ways to protect themselves and others from the spread of the virus. This change of government policy and societal behaviour happened within a matter of weeks and months, not the 15-17 years that is typical in clinical practice. Michie, West and Amlot (2020) outline the behavioural principles that were used to facilitate this fast-tracked application of clinical understanding and research. The first principle applied was “creating a mental model”. The World Health Organisation (WHO) provided clear and accessible charts, graphs and videos explaining what would happen if an intervention were not to take place and how an intervention would improve things for the better. The term ‘flattening the curve’, never heard before January 2020, is now a standard part of our everyday discussions. Visual models of how the virus spreads and is impacted by close social contact were disseminated rapidly via the media to educate people and provide the knowledge to understand why the intervention should occur.

The second principle applied to achieve change was ‘creating new social norms.’ Media campaigns were developed quickly highlighting the importance of ‘social distancing,’ Prime ministers and Presidents took time to tell us to wash our hands, and trending hashtags on social media such as #stayhome and #newnormal reduced the strangeness of these changes to our behaviour. The use of discriminative stimuli in our parks and shops with 2-meter markers and visual prompts to remind us to wash our hands have reinforced this behaviour and ensured people remember the ‘new normal’.

The third principle adopted is “create the right level and type of emotion.” Rubin, Amlot, Page and Wesseley, (2009) discussed how fear or anxiety, while useful in small quantities, are not sufficient emotions to instil meaningful and long-term behaviour change. This is due to the fact these emotions may cause people to act irrationally or impulsively to try and escape that which they are frightened of. Instead, Rubin et al. (2009) advocate educating



people about the challenge or danger while providing solutions and empowering people to make the right choices. This leads to the fourth principle, which is to ‘replace one behaviour with another.’ It is not enough to tell people to stop doing something. An alternative suggestion must be provided. An example of this is face touching which is a significant contributor to the spread of COVID-19. Expert advice did not merely tell people to stop touching their face, but also educated people about what to do instead, such as keep hands below shoulder level (Michie et al., 2020).

Finally, the last principle is to ‘make the behaviour easy’. While nothing about the global lockdown was easy, governments have done all they can to reduce stress and control for financial worries with the introduction of COVID-19 social welfare payments, mortgage holidays, grants to businesses to stay afloat and a suspension of some utilities bills for people who are struggling. The use of two-meter markers in parks and supermarkets takes the pressure off individuals having to judge and remember the rules, as does the presence of gloves and hand sanitiser outside most shops and petrol stations. The combination of these five principles has been effective in changing behaviour as the world has altered dramatically in recent weeks.

Fidelity to these different interventions is being monitored across the globe as well, using a variety of different approaches in different countries. In countries such as China and India, the very stringent method of making people stay in their homes or risk being arrested is in place. Police and soldiers can easily monitor the numbers of people leaving their homes. In western countries such as Ireland, the United Kingdom and the United States of America police do spot checks and a ‘general feel’ for the application of the intervention is gathered. In shops and public spaces, security personnel remind people to remain 2 meters apart with ongoing feedback a vital element to learning. World leaders also provide regular feedback press conferences to let people know how they are doing and to encourage people to keep trying. One of the most reliable sources of information of fidelity to the current lockdown regulations

comes from the google data “COVID-19 Community Mobility Reports’ (Google, 2020) which lend insight into how well social distancing is working in different areas. Police and government officials can then use this data to offer feedback and support in areas that are not managing as well as others to adhere to the guidelines. The critical points to monitoring and improving procedural fidelity of this international intervention have been observation, data collection, feedback and ongoing training.

As WHO reports that the effects of behaviour change may not be seen for a matter of weeks, the fidelity to the changes must be monitored as closely as possible so changes can be made systematically and safely.

#### *1.6.4 Procedural fidelity in behavioural research*

In behavioural research, there is a crucial emphasis on the accuracy of the implementation of interventions (i.e., procedural fidelity). The fields of ABA and PBS have been challenged to provide rigorous empirical research that documents the effectiveness of supports and interventions. In 1988, Van Houten et al. published an article outlining six fundamental rights of individuals receiving services based on the principles of ABA. There are many ways to ensure that such fundamental rights are honoured, and these include drawing from a solid empirical literature base and documenting the effectiveness of these treatments. Another is to ensure that these interventions and treatments are delivered with high fidelity in practice as well as in research settings and that procedural fidelity is seen as an area of crucial methodological concern (Hagermosser-Sannetti & Kratochwill, 2009). From a research perspective, high levels of procedural fidelity are essential in reaching accurate conclusions regarding functional relations between dependent and independent variables. High levels of procedural fidelity increase the internal validity of a study and minimise the possibility that variables not related to the study are affecting outcomes (Cook & Campbell, 1979).

Despite this, the report of quantifiable measures of procedural fidelity within published literature is not the norm. A review conducted by Monchar and Prinz (1991) involving journals across four disciplines: psychology, behaviour therapy, psychiatry and family therapy; found that only 19% of the articles reviewed reported procedural fidelity data. A 2006 review conducted by Wheeler, Baggett, Fox and Blevins found a still low reporting of procedural fidelity data in behaviour analytic journals involving treatments of people with ID, with only 33% of studies providing data. However, a review conducted by Ledford and Wolery (2013) found that there was an increasing trend in the reporting of procedural fidelity in studies over the previous 30 years. While the number of single-case design studies reporting fidelity measures was still low at 45%, suggest a growing interest in this area among researchers and clinicians.

Procedural fidelity is essential from a clinical practice perspective. Decisions about a person's life may be made based on the outcome of a particular intervention. For example, if a procedure is implemented to increase social behaviour, but no increases in the desired behaviour are shown, it may lead the clinician to conclude that the intervention is ineffective and more intensive training is required, or a completely different approach be used (Brand, 2014). If the interventionist believes this procedure to be ineffective, it will make it less likely that they will implement it in the future with other clients or service users. But the procedure may have not been implemented fully or correctly. Valuable, evidence-based interventions may not be disseminated due to an incorrectly administered procedure, and the individual client will not have had access to their fundamental right to effective treatment (Van Houten et al., 1988).

Direct measurement of procedural fidelity in human services is vitally important as the stronger the procedural fidelity, the more likely the intervention will be successful and the individual able to develop (DiGennaro, Martens & Kleinmann, 2007; Vollmer, Roand, Ringdahl & Marcus, 1999). There is growing evidence suggesting that procedural fidelity of

an intervention is directly related to intervention outcomes (Vollmer et al., 1999). Wilder, Atwell and Wine (2006) concluded that new skills were mastered more quickly when treatment was carried out with high fidelity, leading to lower levels of challenging behaviour.

It is acknowledged that carrying out interventions with perfect fidelity in natural environments may not be feasible at all times. Research has been conducted on effective ways to record and monitor procedural fidelity levels across schools and human services (Horner et al., 2004). However, reviews of the school-wide positive behaviour support literature report that procedural fidelity is recorded in less than half of studies (Bruhn, Hirsch & Lloyd, 2015) and that the level of procedural fidelity drops in environments with higher variability such as high schools (Horner, Sugai & Anderson, 2010).

Another challenge to high fidelity of implementation in natural settings is that one of the core characteristics of PBS entails the use of multi-component behaviour support plans incorporating stimulus and reinforcement-based strategies (Lucyshyn, Horner, Dunlap, Albin & Ben, 2002). Relative to residential services, multi-component package treatments present a significant challenge to staff and researchers. Traditional PBS plans may have several different components relating to environmental strategies, reactive strategies, guidelines describing what tone of voice should be used, which can significantly complicate implementation efforts. Given the fact the precise implementation of the independent variable, i.e., treatment integrity, (Wolery, 1994) is of paramount importance to researchers, the degree of implementation may be logically jeopardised when one adds multiple intervention components. The implementation of a single component by an intervention agent is likely to be easier than an array of strategies.

These issues are magnified in applied settings such as residential homes, where multi-component behaviour support plans are implemented by front line staff within natural environments. Staff may not have much training in PBS, making complicated and multi-layered support plans unrealistic. Albin, Lucyshn, Horner & Flannery, (1996) reported that

researchers rarely take into account issues pertaining to ‘goodness of fit’, such as the staff member or carer’s perspective of an intervention and its relative importance. The level of effort or inconvenience associated with its implementation to other people who may live or receive services in the home is rarely taken into account (Albin et al. 1996).

This is an area that is also often overlooked in practice, meaning the huge financial costs of providing support to these individuals may build, often in a cyclical fashion. For instance, a service might pay for a psychologist or behaviour specialist to develop an evidence-based intervention to address the challenging behaviour; the clinician hands this over to the front line staff; for various reasons the front line staff do not implement the intervention with high integrity; the behaviour does not change or worsens; the service, presuming the fault lies with the intervention plan, pays for a psychologist to develop another evidence-based intervention to address the challenging behaviour, and the rising cost cycle begins again. Throughout this process, the service continues to pay for the high level of front line support that the individual requires.

One reason this cycle can occur is that reduction in challenging behaviour (or change in other client outcomes), is the most widely used measure of effectiveness of an intervention (Gresham, 2004). This measure is used by clinicians to determine if an intervention should be modified, terminated, intensified or maintained (Gresham, 2004). If a client’s behaviour improves following the implementation of an intervention, this is commonly seen as an indication that the intervention is effective. If a client’s behaviour deteriorates or they do not show improvement, this is commonly accepted as evidence that the intervention is ineffective. However, a true measure of the intervention’s effectiveness can only be determined if the intervention is carried out as intended (Fiske, 2015). Measurement and monitoring of procedural fidelity is widely used in research based treatments and is a primary methodological concern when developing new interventions. However, the use of procedural fidelity

monitoring in practice settings is extremely low, resulting in uncertainty about the effectiveness of an intervention (Fiske, 2015; Sanetti, Gritter & Dobby, 2011; Wilkinson, 2007). Interventionists should strive to achieve as high standards as possible and to monitor the same (Brand, 2014). It is only through monitoring of procedural fidelity, as well as of intended outcomes such as changes in behaviour, that clinicians will be able to make informed, data-based decisions about the individual's support, an essential dimension of PBS planning (Gore et al., 2013).

### **1.7 Summary**

This chapter has aimed to introduce the context of intellectual disability and challenging behaviour, both in general terms and in terms specific to the Irish context. Challenging behaviour is an area of extreme concern for individuals with intellectual disability, both in terms of its prevalence and in how it is currently being treated. Intellectual disability services in Ireland are continuing to transition from institutional organisations to more community-based services in order to be in line with international best practice. However, there is still much work to be completed in this area, particularly for people with more severe disabilities who remain in residential services which are run with a medical focus. An overview of the development of PBS was provided to give the reader an understanding of how positive behaviour support is delivered in residential services. While it is considered best practice in disability policy and guidelines, there continue to be significant challenges in implementing PBS effectively in residential services due to service restrictions, staff inconsistencies and policy priorities. Implementation challenges were discussed in a general context, and evidence that it is a general problem that can be addressed adequately was presented. Finally, a description of procedural fidelity and its importance to the delivery of interventions, both medical and behavioural was discussed. The rest of this thesis will focus on addressing this problem in the context of implementing PBS plans with adults with intellectual disabilities in

residential settings in Ireland. The thesis aims to explore challenges and barriers to implementing interventions with high fidelity and to provide an intervention which will improve fidelity levels across organisations.

## **2. Chapter 2: Systematic review of behavioural interventions to improve procedural fidelity of interventions delivered by staff and carers in services for individuals with intellectual disabilities<sup>1</sup>**

### **2.1 Chapter overview**

This chapter provides a systematic review of the literature in relation to improving procedural fidelity levels of behavioural interventions and skills training programmes for individuals with intellectual disabilities. The impact of low levels of procedural fidelity is discussed in relation to the quality of life for individuals and the larger financial outcomes for organisations and governments. A systematic review is presented and the findings are summarised and discussed with reference to the type of studies, measures used, results and quality indicators. Finally, some implications for future research are discussed.

### **2.2 Introduction**

There are large costs, both direct and indirect, associated with supporting individuals with intellectual disabilities (ID). It has been estimated that the cost is, on average, \$1m per person over their lifetime in the United States. (Moeschler, 2013). With a prevalence of approximately 1% of the world's population (Maulik, Mascarenhas, Mathers, Dua, & Saxena, 2013), providing support to people with ID is a significant financial consideration. Supports provided include education, medical, social and residential services. In the United States (US), 756,000 individuals with ID need residential support (Larson et al., 2015), with 43% of these people requiring behaviour support (National Core Indicator Data, 2015). Braddock et al., (2015) suggest that this amounts to a staggering \$61 billion cost annually for the US

---

<sup>1</sup> A version of this chapter has been published in a peer-reviewed journal: Brady, L., Padden, C., & McGill, P. (2019). Improving procedural fidelity of behavioural interventions for people with intellectual and developmental disabilities: A systematic review. *Journal of Applied Research in Intellectual Disabilities*, 32(4), 762-778 <https://doi.org/10.1111/jar.12585>



government in long term supports and residential services for adults alone. In the United Kingdom, there are approximately 908,000 adults with ID, with 189,000 using community services at a cost of approximately £5.3 billion per year (Emerson et al., 2012). As of 2015 2,600 adults with ID and challenging behaviour are residing full time in English mental health facilities at a cost of £557 million per year to the National Health Service (National Audit Office [NAO], 2015). The figures are also high in Ireland, where 8,500 individuals with ID receive full-time residential support at a cost of €371 million per year (HSE, 2009). Forty-nine per cent of this money (€191 million) is allocated to individuals with severe challenging behaviours, despite the fact that these individuals make up only 18% of the population of people with ID living in residential services (HSE, 2009). These costs to governments across the globe highlight how vital it is to address the effectiveness of the treatment and services these clients receive. Not only is this important to ensure that people with ID are able to progress, moving away from living with behavioural issues and towards an improved quality of life, but also to ensure governments are able to provide sustainable services for future generations.

Scandals such as Winterbourne View (in the UK) and Aras Attracta (in Ireland), where individuals with ID living in residential services were subjected to ongoing abuse and ineffective services, have created a sense of urgency to improve the quality of lives of people with ID (DOH, 2012). This has led to increasing demand for positive behaviour support (PBS), an evidence-based approach to supporting individuals who display challenging behaviour (LaVigna & Willis, 2012). PBS has principles based in Applied Behaviour Analysis (ABA), normalisation and person centred planning. It emphasises the use of proactive interventions and strategies to support individuals who display challenging behaviour with the goal of improving quality of life. PBS is widely recognised in the UK and Ireland as best practice for supporting people with learning disabilities (particularly those who display behaviours that

challenge). This is reflected in a significant body of authoritative guidance including ‘The Health Act. 2007’ which mandates for the provision of Positive Behaviour Support in residential services (Government of Ireland, 2007) and the National Institute of Clinical Excellence (NICE, 2015). However, Ireland’s Value For Money (2012) report found that there were no national benchmarks for quality of therapy for individuals with ID and no nationally implemented assessment of efficiency of therapy services provided (DOH, 2012). Recommendations were made to develop an assessment of therapies delivered (to include speech and language, behavioural support and occupational therapy), but this has yet to be actioned in Ireland. If interventions (including PBS) are not implemented correctly, the outcomes of reducing challenging behaviour and achieving improved quality of life are less likely to be achieved. With media scrutiny and continual policy pressures, disability services are in desperate need of approaches that can safely and effectively improve the standards of intervention that clients receive.

As discussed in chapter one, procedural fidelity refers to the extent to which an intervention is carried out as intended – in the case of behavioural intervention, this is likely to refer to the extent to which a behavioural intervention is carried out according to a behavioural intervention plan (Gresham, Gansle, Nowell, Cohen & Rosenblum, 1993). Prior literature has shown that while measurement of procedural fidelity is considered a gold standard of research and practice, it is often overlooked and rarely monitored (DiGennaro et al., 2007). There are several factors which may interfere with implementation of an intervention, contributing to low procedural fidelity and poor outcomes for the client (DiGennaro et al., 2007). These factors may include inadequate staff training, incomplete training on the delivery of specific interventions or complex protocols (Vollmer, Sloman & St-Peter-Pipkin, 2008). This raises an ethical issue for any clinician involved, as they may inadvertently be allowing their clients to receive ineffective treatment. It may also lead to suggestions of negligence in cases of

challenging behaviour if the intervention prescribed was not delivered properly. Life changing decisions may be made based on the outcome of interventions that are ineffective, which may include residential placements, use of restrictive procedures or introduction or withdrawal of medications. Vollmer et al. (2008) highlight that few would make these decisions without being certain of procedural fidelity if the problem was medical rather than behavioural. Procedural fidelity is also hugely important from an organisational perspective. Front line staff are often demotivated by lack of progress made with the individuals they support, leading to high absenteeism and burn out (Frederiksen & Riley, 1984).

While research on how to improve procedural fidelity is limited, there is some evidence to support the effectiveness of interventions such as performance feedback (Coddington, Feinberg, Dunn & Pace, 2005), video-modelling (DiGennaro-Reed, Coddington, Catania & Maguire, 2010), goal setting (DiGennaro et al., 2007) and financial incentives (Courtemanche, Sheldon, Sherman, Schroeder, Bell & House, 2014). For instance, Coddington et al. (2005) found that providing teachers with immediate performance feedback on the accuracy of the implementation of antecedent and consequence strategies increased the procedural fidelity with which interventions were carried out. These interventions are relatively inexpensive and straight forward for managers and supervisors to run. However, they only address procedural fidelity at an individual level. Currently it is unclear how much research has investigated ways to improve procedural fidelity in disability services on a wider scale (e.g., across an entire service or organisation).

To date, there is no comprehensive review of approaches to improving procedural fidelity of behavioural interventions. This review aims to summarize the findings of previous studies regarding improvement of procedural fidelity in human services. It will examine the participants used, the settings of the interventions and the different interventions used. The

review will also examine the included studies for quality indicators including social validity, maintenance, generalization and procedural fidelity.

## **2.3 Method**

### *2.3.1 Search Methods*

Comprehensive database searches were carried out up until April 2016 to identify articles to be included in the review. The searches were carried out by entering keyword combinations (see Table 2) into the PsycInfo, SCOPUS, Web of Science and ERIC databases. The reference lists of articles that met inclusion criteria were also hand searched for possible citations of papers not found electronically. Publication year was not restricted, but only papers published in the English language were considered for inclusion.

### *2.3.2 Inclusion Criteria.*

Studies were included if they had:

(1) Included a baseline and post-intervention measure of procedural fidelity of interventions delivered by staff (whether this was the primary focus of the study or was included as a secondary outcome), and

(2) Included staff working in any setting with individuals with an intellectual or developmental disability (e.g., homes, hospitals, group homes, day services, schools, outpatient clinics, etc.). There was no restriction on the type of staff or setting. The review also included studies carried out with families of individuals with ID in their own homes or in clinical settings.

### *2.3.3 Exclusion Criteria.*

Studies were excluded if they came from editorials, newspaper articles and other forms of popular media. Failure to meet any of the inclusion criteria resulted in exclusion from the review. The number of excluded studies (including reasons for exclusion) was recorded at each stage.

Table 2: Search terms

Participants		Intervention		Outcome		Terms related to disability
<ul style="list-style-type: none"> <li>• Frontline staff OR</li> <li>• Frontline employees OR</li> <li>• Frontline workers</li> <li>• Staff OR</li> <li>• Residential Staff OR</li> <li>• Employee OR</li> <li>• Worker OR</li> <li>• Nurse OR</li> <li>• Manager OR</li> <li>• Care Assistant OR</li> <li>• Support worker OR</li> <li>• Parent* OR</li> <li>• Care* OR</li> <li>• Teacher OR</li> <li>• Tutor OR</li> <li>• Direct care OR</li> <li>• Direct worker</li> <li>• Social care worker OR</li> <li>• Direct support OR</li> <li>• Attendant OR</li> <li>• Social worker</li> </ul>	AND	<ul style="list-style-type: none"> <li>• Organisational behav*</li> <li>• management OR</li> <li>• Organizational behav*</li> <li>• management</li> <li>• OBM OR</li> <li>• Periodic service review OR</li> <li>• PSR OR</li> <li>• PSR Model OR</li> <li>• Behav* OR</li> <li>• Intervention</li> <li>• System-Wide positive behaviour support</li> <li>• SWPBS</li> </ul>	AND	<ul style="list-style-type: none"> <li>• Procedural fidelity OR</li> <li>• Fidelity OR</li> <li>• Procedural</li> <li>• Treatment integrity OR</li> <li>• Integrity</li> </ul>	AND	<ul style="list-style-type: none"> <li>• Disability OR</li> <li>• Autism* OR</li> <li>• ASD OR</li> <li>• Asperger* OR</li> <li>• Down Syndrome OR</li> <li>• Fragile X syndrome OR</li> <li>• Disorder OR</li> <li>• Learning disability OR</li> <li>• Intellectual disability OR</li> <li>• Developmental disability OR</li> <li>• Special educational needs OR</li> <li>• Mental retardation OR</li> <li>• Special needs</li> </ul>

### 2.3.4 Selection of studies

All citations sourced from the search strategy were transferred to RefWorks, a reference management programme. The citations were screened for duplicates which were removed. Initial screening of titles and abstracts by the researcher eliminated all those citations obviously irrelevant to the topic (e.g., studies unrelated to behaviour intervention, such as nutrition studies) and studies in a language other than English. Thereafter, full-texts of the remaining papers were screened against the inclusion and exclusion criteria to identify the final sample of papers included. Reasons for exclusion were recorded at each step and are reported in Figure 2. A second reviewer assessed the final studies included to ensure they met criteria and there was 100% agreement between the researchers on included studies.

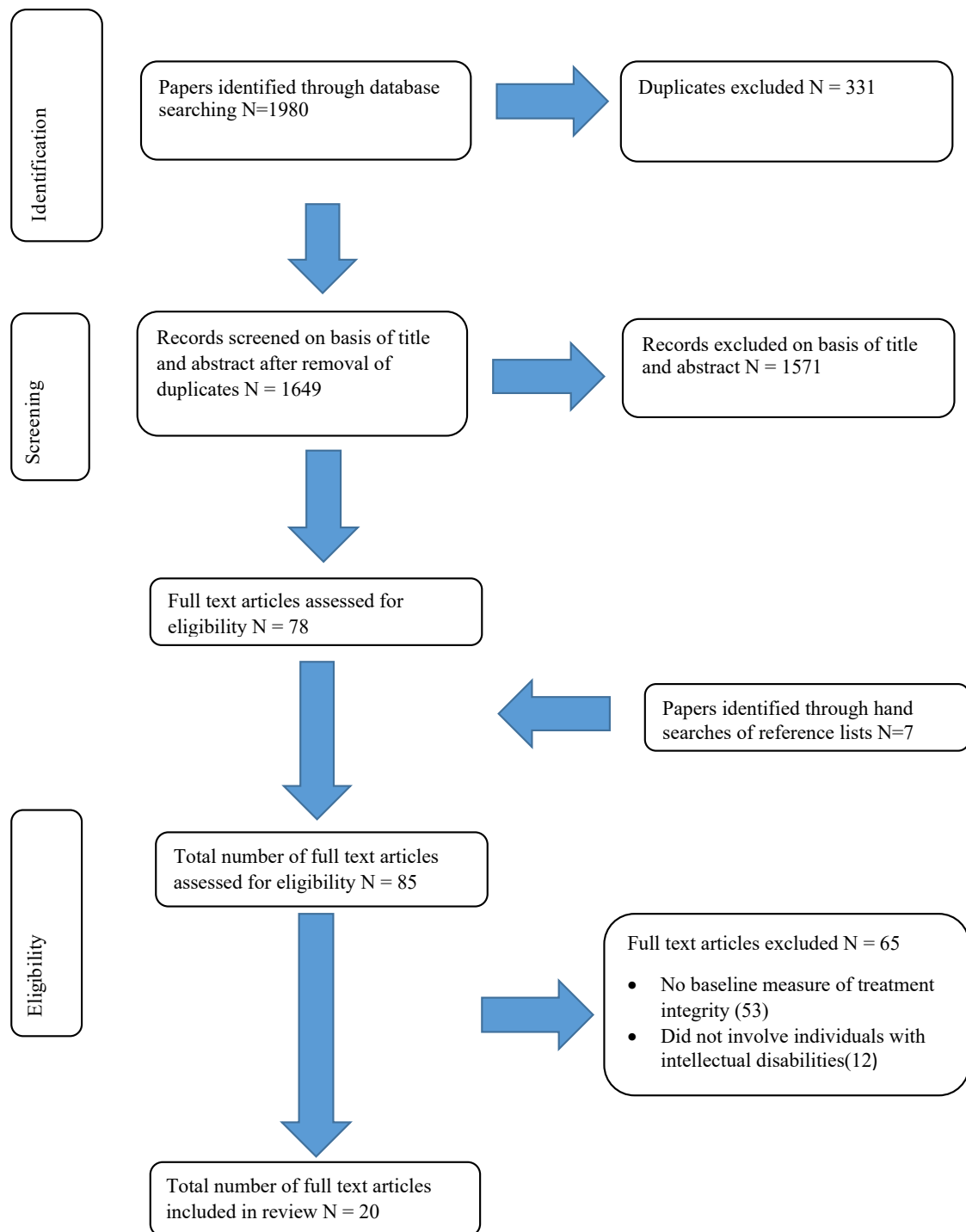


Figure 2: Flow diagram showing inclusion/exclusion of studies identified during database search process

### 2.3.5 Data extraction

The researcher extracted data from the identified studies and recorded it in a specially designed data extraction form. The following data were extracted.

**2.3.5.1 Design.** The type of design used in each study was recorded here and details of variance across settings, participants or behaviours were included when they were available.

**2.3.5.2 Participant characteristics and setting.** Details of number of participants, participants' occupation, gender and the setting in which the intervention took place were recorded for each study where available. Primary participants refer to the staff who were the focus of the treatment fidelity intervention. Secondary participants referred to the individuals with ID who were in receipt of intervention from the primary participants.

**2.3.5.3 Participant intervention.** The main focus of the review was the intervention delivered for the participant (e.g., the use of behavioural skills training to improve treatment fidelity among parents). Interventions were often described in different ways across studies despite having used the same procedures and tactics. Therefore, interventions were pre-defined by the reviewer into 11 categories and the intervention that was used within each study was determined by reviewing the elements that were reported within the study. This ensured consistency across studies. See Table 6 for definitions of each intervention.

**2.3.5.4 Participant target behaviour.** The target behaviour for the participant (i.e., staff/parent/etc.) – such as implementing discrete trial teaching.

**2.3.5.6 Effect size.** Non-overlap of all pairs (NAP) (Parker & Vannest, 2009) was used to measure effect sizes of the procedural fidelity intervention and also the client's intervention where applicable. NAP is used to display the percentage of data which improve across phases (Parker & Vannest, 2009). NAP was chosen as it is appropriate for single case designs. Additionally, it is not affected by ceiling effects and is appropriate to use where there are a small number of data points, which was important in the present review because several of the

studies had small data sets and included interventions that produced ceiling effects. It is also relatively simple to calculate NAP by hand and it has strong statistical power (Parker & Vannest, 2009).

To calculate NAP, pairs must be identified. Each phase A data point is compared with each phase B data point to make pairs. Phase A refers to the baseline data points and Phase B refers to data points in the intervention. NAP is calculated as the number of improving or positive pairs (POS) plus half of the tied pairs (TIES), divided by the total number of pairs (PAIRS) (Parker & Vannest, 2009):

$$- \text{NAP} = \frac{[\text{POS} + 0.5\text{TIES}]}{\text{PAIRS}}$$

NAP effect sizes were coded according to Parker and Vannest's (2009) guidelines using the following ranges: weak effects: 0 - .65; medium effects: .66 - .92; strong effects: .93 - 1.0.

**2.3.5.7 Client characteristics.** Three age categories were used to classify the samples: (a) Child (1-11 years); (b) Adolescent (12-17 years); and (c) Adult (18+ years). Details of the client's diagnosis were also gathered where possible.

**2.3.5.8 Client target behaviour.** Where available, details of the behaviour being targeted for the client were also included for each study (e.g., increasing on-task behaviour).

**2.3.5.9 Quality assessment.** A quality assessment was conducted on each study using the Reichow Evaluative Method (Reichow, Volkmar & Cicchetti, 2008) (see Tables 2.2-2.4). This method can be used to assess the quality of both single subject and group design studies and so was deemed suitable for the present review. The assessment included items relating to quality of participant recruitment, experimental conditions, generalisation, social validity and several other quality indicators. Ratings were awarded to each quality indicator as detailed in Reichow et al. (2008). The criteria for each rating are shown in Table 3. A score is awarded on the basis of each primary indicator (high, acceptable, unacceptable), and then the secondary



indicators are recorded as either present or absent. Based on the number of primary and secondary indicators, the overall study quality is then determined using the guidelines outlined in Table 5. Reichow et al's (2008) original strength ratings had three categories and this has been expanded to five ratings to produce a more sensitive quality assessment tool with a wider range of ratings (Tomlinson, Gore & McGill, 2018). The requirements for each strength rating are shown in Table 4.

The Reichow et al. (2008) evaluative method was designed to identify evidence based practice for children with autism. This is reflected in the primary quality indicator criteria for participants, which require that age, gender and diagnosis for all participants are included in the study. Due to the nature of the included studies (focused on staff and parents), criteria for this quality indicator were adapted. It was deemed acceptable for participant ages not to be reported, since this information (i.e., that they were adults) could be deduced from the information provided (e.g., occupation). Furthermore, since the primary participants were staff and not children with autism, there was no diagnosis to be reported and so this was removed from the requirements. As a result, the ratings for the primary quality indicator of participant characteristics could be coded either as high (if items i-iii were included) or unacceptable (if any of items i-iii were not included), with the acceptable category removed.

**2.3.5.10 Maintenance, generalisation and social validity.** Maintenance was considered to have been included if all aspects of the intervention were removed and the dependent variable assessed. Maintenance was not considered to be included when there was a maintenance/follow up period where the intervention or parts of the intervention were still in place. A study was considered to have assessed for generalisation if the skills were later assessed in untrained settings, with untrained people or with untrained materials. Data from studies that assessed for social validity was extracted regarding the method of assessment, if the method was standardised or non-standardised and the social validity score recorded.

Table 3: Primary quality indicators (adapted from Reichow et al., 2008)

High	Acceptable	Unacceptable
<p>The following participant characteristics are outlined</p> <ul style="list-style-type: none"> <li>(i) Age &amp; gender; age to include adult, adolescent, child</li> <li>(ii) Information on characteristics of interventionist and any secondary participants</li> <li>(iii) If applicable, measures used to obtain standardised test scores</li> </ul>	N/A	Study does not meet all of criteria i, ii & iii
<p><b>Independent variable</b></p> <ul style="list-style-type: none"> <li>- Study defines IV with replicable precision</li> </ul>	Study defines many elements of the IV but omits specific details	Study does not sufficiently define the IV
<p><b>Baseline condition</b></p> <p>100% of baselines:</p> <ul style="list-style-type: none"> <li>*Encompass at least 3 measurement points</li> <li>*Appear through visual analysis to be stable</li> <li>*Have no trend or a counter-therapeutic trend</li> <li>*Have conditions that are operationally defined with replicable precision</li> </ul>	Study in which at least one of the criteria was not met in at least one, but no more than 50% of the baseline data points	Study in which two or more of the criteria were not met in at least one baseline data point or more than 50% of the baseline data points do not meet three of the criteria.
<p><b>Dependent variable</b></p> <ul style="list-style-type: none"> <li>*The variables are defined with operational precision</li> <li>*The details necessary to replicate the measures are provided</li> <li>*The measures are linked to the DV</li> <li>*The measurement data is collected at appropriate times during the study for the analysis being conducted.</li> </ul>	Study that meets three of the four criteria	Study that meets less than three criteria
<p><b>Visual analysis</b></p> <p>100% of graphs</p> <ul style="list-style-type: none"> <li>*Have data that are stable (level or trend)</li> <li>*Contain less than 25% overlap of data points between adjacent conditions, unless behaviour is at ceiling or floor levels in the previous condition</li> <li>*Show a large shift in level or trend between adjacent conditions that coincide with the implementation or removal of the IV</li> </ul>	Study in which two of the criteria were met on at least 66% of the graphs	Study in which two or fewer criteria were met on less than 66% of the graphs

Table 4: Secondary indicators (adapted from Reichow et al., 2008 by Tomlinson et al., 2019)

Interobserver agreement (IOA) Positive if IOA is collected across all conditions, raters and participants with reliability $>.80$
Kappa (KAP) Positive if Kappa is calculated on at least 20% of sessions across all conditions, raters and participants with a score $>.60$
Blind raters (BR) Positive if raters are blind to the treatment condition of the participants
Fidelity (FID) Positive if treatment or procedural fidelity is continuously assessed across participants, conditions and implementers, and if applicable, has measurement statistics $>.80$
Generalisation or Maintenance (G/M) Positive if outcome measures are collected after the final data collection to assess generalisation or maintenance
Social validity (SV) Positive if study contains at least four of the following features: *Socially important DVs *Time and cost effective intervention *Comparisons between individuals with and without disabilities *A behavioural change that is large enough for practical value *Consumers who are satisfied with the results *IV manipulation by people who typically come into contact with the participant *A natural context

Table 5: Guidelines for determination of research report strength ratings (Adapted from Reichow et al., 2008)

<b>Strength rating</b>	<b>Criteria</b>
Weak	Received fewer than three high quality grades on primary quality indicators or showed evidence of less than two secondary quality indicators
Borderline adequate	Received high quality grades on three primary quality indicators with no unacceptable quality grades on any primary indicators and showed evidence of at least two secondary quality indicators
Adequate	Received high quality grades on four primary quality indicators with only one unacceptable quality grades on any primary indicators and showed evidence of at least two secondary quality indicators
Borderline strong	Received high quality grades on five primary quality indicators with no unacceptable quality grades on any primary indicators and showed evidence of three or more secondary quality indicators
Strong	Received high quality grades on all primary quality indicators and showed evidence of three or more secondary quality indicators

#### 2.4.6 Inter-rater reliability

Once data extraction was complete, a second researcher conducted inter-rater reliability on 100% of the included studies. The second researcher independently conducted data extraction on all studies. Agreements were defined as both observers identifying the same characteristics for extraction or arriving at the same NAP figure or quality rating. Disagreements were defined as observers recording different characteristics for extraction or producing a different NAP figure or quality rating. Mean inter-rater reliability was calculated using the following formula:

$$[\text{Number of agreements}/\text{number of agreements plus number of disagreements}] \times 100$$

Mean inter-observer agreement was found to be 84.3% (range 63.6% - 100%). Any disagreements were discussed between the researchers and resolved.

Table 6: Intervention codes and definitions

<b>Code</b>	<b>Definition</b>
<b>1 Feedback</b>	To include praise for steps followed and corrective feedback for incorrect implementation. Feedback might be provided by a supervisor, trainer or researcher in vivo, immediately following implementation or in days following intervention. Feedback may be delivered in person, via skype, via email or memo.
<b>2 Role play</b>	Participants act out steps of intervention in a contrived situation, supervised by researcher, manager or peers.
<b>3 Modelling</b>	Trainer or researcher carries out intervention while being observed by participant. This may be done in person or recorded for “video modelling” which can be viewed at the participants’ leisure. Modelling may be carried out with a participant or with a substitute actor playing the role of participant.
<b>4 Self-monitoring</b>	Researcher develops data sheet/ task analysis of steps in intervention. To include when participant scores themselves on sheet as they carry out intervention. This may be done during the intervention, after as reflective practice or by reviewing video tape of themselves carrying out the intervention and scoring the tape.
<b>5 Quiz/ Assessment</b>	To include when the participant is provided with written quiz about intervention or theory to complete within 24 hours. Can also include when researcher or trainer assesses participant while observing them carry out intervention. Participant is required to reach certain criteria to pass quiz/assessment. If the participant does not reach <b>criteria</b> , they must repeat the assessment until they do
<b>6 Teaching/ Instruction</b>	Sessions dedicated to giving participants background knowledge of theory for basis of intervention. May be provided 1:1 or in group situations. May be one off session or provided regularly over a number of weeks. May be provided in person or using computer training programmes.
<b>7 Financial incentive</b>	Participants receive monetary reward on achieving certain pre-agreed criteria.
<b>8 Goal setting</b>	To include when participants set goals for client behaviour and monitor participant’s progress towards that goal. Also to include when participants set goals for their own progress and targets to be achieved. Goals are set with support from supervisor or researcher.
<b>9 Observation</b>	Participant is watched by a supervisor, trainer or peer when implementing intervention. Participant may or may not be informed why the observer is present. Also to include when observation takes place via video camera or one way mirror.
<b>10 Negative reinforcement</b>	If a participant does not achieve criteria for the implementation of an intervention, they must attend a meeting with consultant/supervisor. If the participant does achieve criteria for the implementation of an intervention they do not have to attend a meeting.
<b>11 Behavioural skills training</b>	Training package that includes feedback, role-play, modelling and instruction.

## 2.5 Results

A total of 20 papers published between 2004 and 2016 met the inclusion criteria. Table 7 summarises experimental design, participant characteristics and setting, intervention, participant target behaviour, participant effect size, participant characteristics, target behaviour and effect size (where applicable), quality assessment, and information on generalisation, maintenance and social validity.

### 2.5.1 Study Design

The majority of studies ( $n = 19$ ) used a single case research design, with only one study (Minjarez, Williams, Mercier, & Hardan, 2011) reporting use of a group (pretest-posttest) experimental design. Of the studies that had used a single subject design, a multiple baseline across participants design was most common, with 90% ( $n = 18$ ) of the studies reporting use of this design and only 5% ( $n = 1$ ) reporting use of a within subjects changing criterion design (Weinkauff, Zeug, Anderson & Ala'i-Rosales, 2011). Given that only one study (Minjarez et al. 2011) had reported use of a group experimental design, the results of this study have been presented separately first, followed by the findings for the studies that used a single case research design.

### 2.5.2 Group design studies:

The one study (Minjarez et al., 2011) that reported using a group experimental design used a pretest-posttest design conducted over an 18-month period. 17 parents of children with ASD (all male) took part in the study which consisted of behavioural skills training, assessment, goal setting and observations being conducted on a weekly basis either in person or via video in a clinical setting. The parents were trained to implement Pivotal Response Training with their children with high fidelity targeting specific language goals identified by the parents and the researchers in a clinical setting. Results found significant increases both in the parents' procedural fidelity and the level of children's utterances. The quality assessment

of the study carried out according to the Reichow et al. (2008) Method found the study to be borderline adequate. The study did not assess for generalisation, maintenance or social validity.

### 2.5.3 *Single case design studies*

Studies that used a single case research design have been presented in Table 7. The results are outlined below.

**2.5.3.1 Primary participants.** Across the 19 studies, a total of 83 participants took part with between 3-9 participants in each study. Sixty three participants were female and 13 were male. Two studies (Courtemanche et al., 2014 and McKenny & Bristol, 2015) did not report details of gender. Studies included as participants, teachers ( $n = 34$ ; 41%) (Belfiore, Fritts & Herman, 2008; Coddling et al., 2005; Coddling, Livanis & Pace, 2008; DiGennaro, Martens & McIntyre, 2005; DiGennaro et al., 2007; DiGennaro-Reed et al., 2010; Flynn & Lo, 2015; McKenny & Bristol, 2015; Miller, Carlson & Sigurdsson, 2014; Mouzakis, Coddling & Tyron, 2015; Pelletier, McNamara, Braga-Kenyon, & Ahern. 2010; Plavnick, Ferreri & Maupin, 2010), parents ( $n = 16$ ; 19%) (Coolican, Smith & Bryson, 2010; Ingersoll & Wainer, 2013), paraprofessionals (defined as persons in various fields who are trained to assist professionals, but do not themselves hold professional licensure) ( $n = 13$ ; 16%) (Courtemanche et al., 2014; Maginn, Fallon, Hagermoser Sanetti, & Ruberto, 2012; McKenny & Bristol, 2015; Plavnick et al., 2010), students (undergraduate and postgraduate) ( $n = 10$ ; 12%), front line staff ( $n = 9$ ; 11%) (Pollard, Higby & Brodhead, 2014; Vince Garland, Holden & Garland, 2016), (Courtemanche et al., 2014; Weinkauff et al., 2011) and 1 (1%) was a clinician (speech and language pathologist) (McKenny & Bristol, 2015). A number of studies combined participants from different occupations. Courtemanche et al. (2014) combined paraprofessionals and direct care staff; McKenny and Bristol (2015) combined teachers, paraprofessionals and clinicians, while Miller et al., (2014) and Plavnick et al., (2010) combined para professionals and teachers in their studies.

Table 7: Data Extraction Table

Included studies	Design	Participant characteristics & setting	Participant intervention (see Table 6)	Participant target behaviour	PPT Effect size NAP	Secondary Participants	Secondary Participants Target behaviour	Secondary participants effect size NAP	Quality Assessment of primary participants	Maintenance (M), generalisation (G), social validity (SV)
Belfiore et al. 2008	Multiple baseline design across participants	<b>N</b> = 3 staff (all female) <b>Setting:</b> private school for children with ASD	4	Administer discrete trial instruction (DTI)	M: 99% (Range 98-100%)  Strong	N = Unknown Gender = Unknown Children ASD	Increasing nonverbal imitation and receptive body parts	Could not calculate NAP (data not provided)	Borderline adequate	M: *Follow up observations after 4 weeks *1/3 participants maintained intervention level of implementation G: None SV: None
Codding et al. 2005	Multiple baseline design across teacher – student dyads	<b>N</b> = 5 teachers (3 male 2 female) <b>Setting:</b> Private school for students with acquired brain injury & behaviour problems	A: 1 + 9 (with antecedent strategies) B: 1 + 9 (with consequence strategies)	Administer behaviour support plan (Antecedent & consequence strategies)	A: M = 78.21% (range 53.85-91.43%) Medium B: M = 92.74% (range 69.23-100%) Strong	N= 5 5 male Adolescent Acquired brain injury	Tantrums, preservative speech, inappropriate speech, inappropriate social behaviour, teasing, noncompliance, inappropriate social behaviour, major aggression, minor aggression, inappropriate touching, public exposure, instigation, destruction, peer instigation, invasion of space, property destruction, mimicking, wandering	Could not calculate NAP (data not provided)	Weak	M: *Follow up after 5, 10 & 15 weeks *5/5 ppts maintained intervention level implementation G:NONE SV: 10 item questionnaire (item value range 1-5) Average 4.5-5.0 for each item
Codding et al. 2008	Multiple baseline design across staff members with alternating treatments	<b>N</b> = 3 teachers (1 male 2 female) <b>Setting:</b> Mainstream school.	A: 1 & 9 (present) B: 1 & 9 (absent)	Administer behaviour support plan	A: M = 99% (range: 98 – 100%) Strong B: M= 99% (range: 98-100%)  Strong	N = 6 5 female 1 male Adolescent 5 ADHD, 3 Bi-polar, 3 conduct disorder, 1 anxiety disorder	Prosocial behaviours and noncompliance	Could not calculate NAP (data not provided)	Weak	M: None G: None S.V: 10 item questionnaire (item value range 1-5) M=4.8



Included studies	Design	Participants characteristics & setting	Participant Intervention	Participant Target behaviour	Participant effect size NAP	Secondary Participants	Secondary Participants target behaviour	Secondary participants effect size NAP	Quality assessment of primary participants	Maintenance (M), generalisation (G). Social validity (SV)
Coolican et al. 2010	Non – concurrent Multiple baseline design across participants	<b>N</b> = 8 parents of children with ASD (5 female 3 male) <b>Setting:</b> Clinical laboratory and family home	11	Pivotal Response Training	M = 80.21% (range = 55-100%) Medium	N = 8 7 Male, 1 Female Children ASD	Increase children's utterances	M: 89% (Range: 71 – 100%) Medium	Borderline adequate	M: Follow up at 2 to 4 months, gains maintained G: None S.V. Parent satisfaction questionnaire (item value range 1-10) Rated the whole training experience as very helpful (M = 9/10)
Courteman che et al. (2014)	Multiple baseline design across participants (dyads)	<b>N</b> = 3 (1 para professional 2 direct care staff) <b>Setting:</b> 1 in SEN classroom, 1 in community home, 1 in group home van	A: 5,7,11 B: 1, 2, 7, 9, 10 (observer present) C: 1, 2, 7, 9, 10 (observer absent)	Administer behaviour support plan	A:M= 62% (Range:8-100) Weak B:M = 80% (Range:79-100) Medium C:M= 100% Strong	N= 3 1 Adolescent, 2 adults 1 ASD, 1 ASD + profound ID + ADHD, 1 profound ID + anxiety disorder	Reduction of SIB	A:M= 74% (Range: 71 – 76) Medium B:M=81 (Range: 71-100) Medium C:M= 61.09% (Range: – 47.92 – 69.39) Weak	Borderline adequate	M: None G: None SV: Participants completed a 10 item questionnaire & agreed they liked the teaching procedures.
Di Gennaro et al. 2005	Multiple baseline design across dyads	<b>N</b> = 4 Teachers (all female) <b>Setting:</b> 3 mainstream school, 1 special education classroom	A: 11 BASELINE C: 1, 2, 3, 10	Administer behaviour support plan	A:M = 100% Strong Return to baseline C: 100% Strong	N = 4 3 male, 1 female Children 3 ADHD 1 intellectual disability	Off task behaviours	A:M = 80.55% (Range: 0 – 9450 - 100%) Medium Return to baseline C: M: 81.82% (Range: 71.67 – 88.24) Medium	Adequate	M: None G: None S.V. 15-item standardised questionnaire (Intervention Rating Profile-15 (item value range 1-6) M = 4.8/6)

Included studies	Design	Participant characteristics & setting	Intervention	Participant target behaviour	Participant effect size (NAP)	Secondary Participants	Secondary Participants target behaviour	Secondary Participants effect size NAP	Quality assessment of primary participants	Maintenance (M), generalisation (G), social validity (SV)
Di Gennaro et al. 2007	Multiple baseline design across dyads	<b>N</b> = 4 teachers (2 male, 2 female) <b>Setting:</b> Residential and educational facility for students with brain injuries	A: 11 B: 1 C: 1 & 8 D: 1 & 10	Administer behaviour support plan	A:M = 98.33% Range 93.33 - 100% Strong B:M = 70.83% Range 50 - 100% Medium C:M = 85.71% Range 50 - 100% Medium D: 99.72% Range: 98.86 - 100% Strong	N = 4 3 Male, 1 Female 3 Children, 1 adult 3 Seizure disorder, 1 anxiety, 1 developmental disorders, 1 intellectual disability, 3 brain injury, 2 ADHD, 1 blindness	Off task behaviour	A:M = 80.59% Range 61.11-97.92% Medium B:M = 75.35% Range -55.56-87.5% Medium C:M = 80.88% Range 56.25-100% Medium D: M = 85.33% Range: 74.6-99.16% Medium	Weak	M: None G: None S.V: 15-item standardised questionnaire (Intervention Rating Profile-15 (item value range 1-6) M = 5.2/6
Di-Gennaro Reed et al. (2010)	Multiple baseline design across participants	<b>N</b> = 3 teachers (All female) <b>Setting:</b> Residential and educational facility for students with brain injuries	A: 3 B: 1 & 3	Administer behaviour support plan	A:M = 98% Range 93 - 100% STRONG B:M = 100%  Strong	N= 3 Children	Problem behaviours	Could not calculate NAP (data not provided)	Adequate	M: 1 Week follow up probe 3/3 ppts maintained intervention levels of implementation G: None SV: 15-item standardised questionnaire (Intervention Rating Profile-15) Item value 1-6. A: M = 4.06/6. B: M = 4.93/6.
Flynn & Lo. 2015	Multiple probe across participants	<b>N</b> = 3 teachers (all female) <b>Setting:</b> Special education	A: 11 (with trial-based functional analysis) B: 11, 2, 3, 6 (with DRA)	Implementation of trial-based functional analysis (TBFA) and DRA procedures	<b>A (with TBFA):</b> M = 100% Strong <b>B (with DRA):</b> M = 100% Strong	N= 6 5 male, 1 female Children 5 ASD 1 EBD	Vocal outbursts, elopement, giggling, self-stimulation	DRA Replacement bx M: 100% Strong Challenging bx reduction M = 100% Strong	Strong	M: None G: Included extra students for generalization TBFA: M=94.5% DRA Teacher 1: 98%, Teacher 2: 92% Teacher 3: Did not achieve criterion SV: Adapted version of Teacher Post-Intervention Acceptability and Importance of Effects Survey. 11 items ranked 1-5. All 4 & 5

Included studies	Design	Participants characteristics and setting	Participant intervention	Participant target behaviour	Participant effect size (NAP)	Secondary Participants	Secondary Participants target Behaviour	Secondary Participants effect size NAP	Quality Assessment of primary participants	Maintenance (M), generalisation (G), social validity (SV)
Ingersoll & Wainer. 2013	Multiple baseline design across participants	<b>N= 8</b> Parents of children with ASD (All female) <b>Setting:</b> Research laboratory and family home	11, 8	Administer behaviour intervention (Project ImPACT)	M = 95% (Range: 85 – 99.5%) Strong	N= 8 7 Male, 1 Female Children ASD	Increase spontaneous speech.	M: 73.53% (range: 59.52-92.42%) Medium	Borderline Adequate	M: 1 month follow up * G: None SV: None
Maggin et al. 2012	Multiple baseline design across participants	<b>N= 3</b> Para educators (All female) <b>Setting:</b> SEN classroom for students with EBD	A: 2, 3, 6 B: 11	Administer good behaviour game	A:M = 100% Strong B:M = 100% Strong	N = 4 4 male children ADHD, ED, ID	Aggressive behaviours	A:M = 100% Strong B:M = 99.5% Range 99 – 100 Strong	Borderline Adequate	M: 1 day a week for 5 weeks *3/3 ppts maintained high levels of implementation G: None SV: Usage Rating profile intervention 35 items ranked 1 -6 Highly acceptable M= 5.47
Mc Kenney & Bristol 2015	Multiple baseline design across participants	<b>N = 9</b> 3 Special education teachers 1 SLT 5 Teaching assistants (Gender not provided) <b>Setting:</b> SEN Classroom	1, 2, 3, 9	Administer Discrete Trial training	M = 95.69% (range: 85.71-100%) Strong	N= 3 Children ASD and intellectual disability	Specific targets not provided	Could not calculate NAP (data not provided)	Weak	M: -None G: None SV: 10-item acceptability survey developed by the authors. Values from 1-7. Overall mean = 5,27
Miller et al. (2014)	Multiple baseline design across participants	<b>N = 3</b> 1 Educational aide 1 Teacher's assistant 1 teacher (All female) <b>Setting:</b> SEN School	1 & 7	Implement DTT	M = 96% (Range: 87 – 100%) Strong	Data not provided	Specific targets not provided	Could not calculate NAP (data not provided)	Adequate	M: None G: None SV: 3-item social validity survey developed by the authors. Value range 1-5. M = 4.3/5.
Mouzakitis et al. 2015	Multiple baseline design across participants	<b>N = 4</b> Special education teachers (All female) <b>Setting:</b> Inclusion programme in a mainstream school	A: 4 B: 1 & 4	Administer behaviour support plan	A: M = 93.43% (range: 80.08-100%) Strong B: M = 90.2% (range: 72.12-100%) Medium	N = 8 8 Male Children ASD	On-task behaviour	A: M = 83.92 (range: 48.82-100) Medium B: M = 51.68 (range: 40-83.71) Weak	Borderline adequate	M: None G: Included extra students for generalization SV:None

Included studies	Design	Participant characteristics & setting	Participant intervention	Participant target behaviour	Participant effect size NAP	Secondary Participants	Secondary Participants target behaviour	Secondary Participants effect size NAP	Quality Assessment of primary participant	Maintenance (M), generalisation (G), social validity (SV)
Pelletier et al. 2010	Multiple baseline design across participants (dyads)	<b>N</b> = 3 Teachers (2 female, 1 male) <b>Setting:</b> Residential and day school for children with autism	1, 2, 4, 9	Administer behaviour support plan	M: 100% Strong	N= 1 Adolescent Female ASD	Self-injurious behaviour, physical aggression.	Could not calculate NAP (data not provided)	Adequate	M: None G: None SV: None
Plavnick et al. 2010	Multiple baseline design across participants	<b>N</b> = 3 1 Teacher 2 Paraprofessionals (All female) <b>Setting:</b> Special education classroom	A: 11 B: 4	Administer token economy	A: M:100% Strong B: 97.2% (Range 92.86 – 100) Strong	N = 2 1 male, 1 female Children 1 ASD 1 Williams syndrome & language impairment	Appropriate vocalising and appropriate sitting	A: 89.17% Range (91.67 – 100%) Medium B: M= 99.34% Range = 98.68 – 100 Strong	Weak	M: None G: None SV: None
Pollard et al. 2014	Multiple baseline design across participants	<b>N</b> = 4 Undergraduate students from SEN course (All female) <b>Setting:</b> Office setting	1, 2, 6, 9	Implement DTT	M: 99.5% (Range: 98 – 100%) Strong	N = 2 Children ASD	Skill acquisition (targets included nonsense shapes and unknown colours)	Could not calculate NAP (data not provided)	Adequate	M: None G: None SV: 8-item questionnaire developed by the authors. Value range: Strongly agree to strongly disagree (5 options). Participants agreed or strongly agreed with all statements (one negative – that the videos did not always work properly).
Vince Garland et al. 2016	Multiple baseline across participants	<b>N</b> = 6 Masters level special education students (3 male 3 female) <b>Setting:</b> Research laboratory	1, 3, 5, 6	Implement system of least prompts	M: 100% Strong	N = 1 <b>Simulation Avatar</b> ASD & ID	Skill acquisition (specific targets not provided)	Could not calculate NAP (data not provided and study used an avatar)	Strong	M: At least 2 weekly maintenance phases per participant *6/6 ppts maintained intervention levels of implementation G: None SV: Focus group & 6 item social validity survey developed by the authors. Value range 1-5. All participants highly agreed with the usefulness of the teaching procedures.

Authors	Design	Participants characteristics & setting	Intervention	Participant target behaviour	Participant effect size NAP	Secondary Participants	Secondary Participants target behaviour	Secondary Participants effect size	Quality assessment of primary participants	Maintenance (M), generalisation (G), social validity (SV)
Weinkauf et al. 2011	Changing criterion design	<b>N= 4</b> Trainees in autism treatment programme (All Females) <b>Setting:</b> Therapy rooms at autism treatment centre	1, 3, 4, 5, 6, 9	Increase skills identified as necessary for high procedural fidelity implementation (based on checklist of 125 behavioural skills)	M: 100% Strong	N = 4 Children ASD	Increase engagement, skill acquisition and appropriate transitioning	Could not calculate NAP (data not provided)	Borderline adequate	M: None G: None SV: None

**2.5.3.2. Secondary participants.** Two studies (Belfiore et al., 2008; Miller et al., 2014) did not include details on the secondary participants. The percentages calculated below refer to the 17 studies that reported details for the secondary participants (Coddling et al., 2005; Coddling et al., 2008; Coolican et al., 2010; Courtemanche et al., 2014; DiGennaro et al., 2005; DiGennaro et al., 2007; DiGennaro-Reed et al., 2010; Flynn & Lo, 2015; Ingersoll & Wainer, 2013; Maginn et al., 2012; McKenny & Bristol, 2015; Mouzakitis et al., 2015; Pelletier et al., 2010; Plavnick et al., 2010; Pollard et al., 2014; Vince Garland et al., 2016; Weinkauff et al., 2011). Across these 17 studies, there was a total of 72 secondary participants.

**2.5.3.3 Age.** The ages of the secondary participants were divided into three categories: children (age 0-11), adolescents (age 12-17) and adults (aged 18 years or older). Two studies combined two of these age groups, with Courtemanche et al. (2014) including 1 adolescent and 2 adults, and DiGennaro et al. (2007) including 3 children and 1 adult in their study. All other studies only used one age group. Overall, 12 studies accounting for 76.4% ( $n = 55$ ) of secondary participants included children (Coolican et al., 2010; DiGennaro et al., 2005; DiGennaro et al., 2007, DiGennaro-Reed et al., 2010; Flynn & Lo, 2015; Ingersoll & Wainer, 2013; Maginn et al., 2012; McKenny & Bristol, 2015; Mouzakitis et al., 2015; Plavnick et al., 2010; Pollard et al., 2014; Weinkauff et al., 2011), while 4 studies accounting for 18.1% ( $n = 13$ ) of secondary participants included adolescents (Coddling et al., 2005; Coddling et al., 2008; Courtemanche et al., 2014; Pelletier et al., 2010). Two studies accounting for 4.2% ( $n = 3$ ) of secondary participants included adults (Courtemanche et al., 2014; DiGennaro et al., 2007), while one study (Vince Garland et al., 2016) used an adolescent avatar character in their computer simulation.

**2.5.3.4 Diagnosis.** Two studies (DiGennaro-Reed et al., 2010; Miller et al., 2014) did not provide any information on the diagnoses of secondary participants. Most secondary participants (73%,  $n = 51$ ) had a single diagnosis with ASD as the most common diagnosis among this group (74.5%,  $n = 38$ ) (Belfiore et al., 2008; Coolican et al., 2010; Courtemanche et al., 2014; Flynn & Lo, 2015; Ingersoll & Wainer, 2013; Mouzakitis et al., 2015; Pelletier et al., 2010; Plavnick et al., 2014; Pollard et al., 2014; Weinkauff et al., 2011). Of the remaining participants with a single diagnosis, 5 (9.8%) had a diagnosis of Acquired Brain Injury, 3 (5.8%) were diagnosed with emotional disturbance (Flynn & Lo, 2015; Maginn et al., 2012), 3 (5.8%) were diagnosed with Attention-Deficit Hyperactivity Disorder (ADHD; DiGennaro et al., 2005) and 1 (1.9%) had a diagnosis of intellectual disability (DiGennaro et al., 2005). Nineteen (27%) of the secondary participants were reported to have a multiple diagnosis (Coddling et al. 2008; Courtemanche et al., 2014; DiGennaro et al., 2007; Maginn et al., 2012; McKenny & Bristol, 2015; Vince Garland et al., 2016).

**2.5.3.5 Settings.** Twelve studies (42%) were set in a special educational needs setting (Belfiore et al., 2008; Coddling et al., 2005; Courtemanche et al., 2014; DiGennaro et al., 2005; DiGennaro et al., 2007; DiGennaro-Reed et al., 2010; Flynn & Lo, 2015; Maginn et al., 2012; McKenny & Bristol, 2015; Miller et al., 2014; Pelletier et al., 2010; Plavnick et al., 2010), five studies (21%) were set in a clinical or laboratory setting (Coolican et al., 2010; Ingersoll & Wainer, 2013; Pollard et al., 2014; Vince Garland et al., 2016; Weinkauff et al., 2011), two studies (13%) were based in a mainstream classroom (Coddling et al., 2008; Mouzakitis et al., 2015), and one study (4% each) took place in each of the following: a residential facility for individuals with ID (Courtemanche et al., 2014); family home (Ingersoll & Wainer, 2013) and the community (Courtemanche et al. 2014). Four of these studies had carried out the intervention in more than one setting. Coolican et al. (2010) carried out the intervention in a clinical laboratory and in a family home, while DiGennaro et

al. (2005) carried out the intervention in a mainstream setting and in a Special Educational Needs (SEN) setting. Courtemanche et al. (2014) carried out the intervention in an SEN classroom, a community home and in a group-home van, and finally Ingersoll and Wainer (2013) carried out the intervention in a clinical setting and in the family home.

**2.5.3.6 Target behaviour of primary participants.** The target behaviour in all studies was increasing implementation accuracy of interventions. There was an even balance between behaviour reduction and skills teaching, with 47% of the interventions being implemented to reduce participant problem behaviours using function-based behaviour support plans (Coddling et al., 2005, Coddling et al., 2008; Courtemanche et al., 2014; DiGennaro et al., 2005; DiGennaro et al., 2007; DiGennaro-Reed et al., 2010; Flynn & Lo, 2015; Pelletier et al., 2010) and the Good Behaviour Game (Maginn et al., 2012), while 53% of the interventions were implemented to increase positive behaviours or teach skills with discrete trial training (Belfiore et al., 2008; McKenny & Bristol, 2015; Miller et al., 2014; Pollard et al., 2014), pivotal response training (Coolican et al., 2010), system of least prompts (Vince Garland et al., 2016), a token economy (Plavnick et al., 2010) and Project ImPACT (Ingersoll & Wainer, 2013) which is a social communication intervention for children which uses modelling to increase spontaneous language.

**2.5.3.7 Intervention.** Interventions were coded into 11 types. Most studies used a combination of interventions and the results reported highlight the inclusion of a particular intervention in the study. The most commonly employed intervention was feedback, used in 13 (22%) studies (Coddling et al., 2005; Coddling et al., 2008; Courtemanche et al., 2014; DiGennaro et al., 2005; DiGennaro et al., 2008; DiGennaro-Reed et al., 2010; McKenny & Bristol., 2015; Miller et al., 2014; Mouzakitis et al., 2015; Pelletier et al., 2010; Pollard et al., 2014; Vince Garland et al., 2015; Weinkauff et al., 2011). This was followed by observation (Coddling et al., 2005; Coddling et al., 2008; Courtemanche et al., 2011; McKenny & Bristol.,



2015; Pelletier et al., 2010; Pollard et al., 2014; Weinkauff et al., 2011), role-play (Courtemanche et al., 2014; DiGennaro et al., 2005; Flynn & Lo, 2015; Maginn et al., 2012; McKenny & Bristol, 2015; Pelletier et al., 2010; Pollard et al., 2014) and modelling (DiGennaro et al., 2005; DiGennaro-Reed et al., 2010; Flynn & Lo, 2015; Maginn et al., 2012; McKenny & Bristol, 2015; Vince Garland et al., 2016; Weinkauff et al., 2011), each included in 7 (11.9%) studies. Behavioural skills training (which includes feedback, role play, modelling and instruction) was included in 6 (10.1%) studies (Coolican et al., 2010; Courtemanche et al., 2014; Flynn & Lo, 2015; Ingersoll & Wainer, 2013; Maginn et al., 2012; Plavnick et al., 2010). Self-monitoring (Belfiore et al., 2008; Mouzakis et al., 2015; Pelletier et al., 2010; Plavnick et al., 2010; Weinkauff et al., 2011) and teaching (Flynn & Lo, 2015; Maginn et al., 2012; Pollard et al., 2014; Vince Garland et al., 2016; Weinkauff et al., 2011) were included in 5 (8.5%) studies, and quizzes were used in 3 (5.1%) studies (Courtemanche et al., 2014; Vince Garland et al., 2016; Weinkauff et al., 2011). Finally, negative reinforcement (DiGennaro et al., 2005; DiGennaro et al., 2008), financial incentive (Courtemanche et al., 2014; Miller et al., 2014) and goal setting (DiGennaro et al., 2008; Ingersoll & Wainer, 2013) were each used in 2 (3.3%) studies.

#### **2.5.3.8 Effect sizes (NAP)**

*Primary participants.* NAP effect sizes were calculated to determine the effect the intervention had on treatment fidelity for the primary participant. A total of 32 effect sizes were calculated across the 19 studies as some studies had several phases to their interventions. These effect sizes were then coded into weak, medium and strong effects according to Parker and Vannest's (2009) guidelines. Eighteen (78.13%) studies were found to have strong effect sizes (Belfiore et al., 2008; Coddling et al., 2005; Coddling et al., 2008, Courtemanche et al., 2014; DiGennaro et al., 2005; DiGennaro et al., 2007; DiGennaro-Reed et al., 2010; Flynn & Lo, 2015; Ingersoll & Wainer., 2013; Maginn et al., 2012; McKenny & Bristol, 2015; Miller et al.,

2014; Mouzakitis et al., 2015; Pelletier et al., 2010; Plavnick et al., 2010; Pollard et al., 2014; Vince Garland et al., 2016; Weinkauff et al., 2011). Four (18.75%) studies were found to have medium effect sizes (Coddling et al., 2005, Coolican et al., 2010; Courtemanche et al., 2014; DiGennaro et al., 2007; Mouzakitis et al., 2015), while one (2.7%) was found to have a weak effect size (Courtemanche et al., 2014). Means and ranges are reported in Table 7.

*Secondary participants.* NAP for secondary participants was calculated for 10 of the 19 included studies. Nine studies (Belfiore et al., 2008; Coddling et al., 2005; Coddling et al., 2008; DiGennaro Reed et al., 2010; McKenny & Bristol, 2015; Miller et al., 2014; Peletier et al., 2010; Pollard et al., 2014; Vince Garland et al., 2016; Weikauff et al., 2011) did not include data on participant outcomes so effect size could not be determined. A total of 19 effect sizes were calculated across the 10 studies. Five (26.32%) interventions were found to have a strong effect size, (Flynn & Lo, 2015; Maginn et al., 2012; Plavnick et al., 2010), twelve (63.16%) were found to have a medium effect size, (Coolican et al., 2010; Courtemanche et al., 2014; DiGennaro et al., 2005; DiGennaro et al., 2007; Ingersoll & Wainer, 2013; Mouzakitis et al., 2015; Plavnick et al., 2010) and two (10.53%) were found to have a weak effect size (Courtemanche et al., 2014; Mouzakitis et al., 2015). Means and ranges are reported in Table 7.

*Correlation between effect sizes.* Pearson's  $r$  correlation was conducted to determine if there was a relationship between the primary participant effect size (i.e., for treatment fidelity) and the participant effect size (i.e., for the participant's behaviour that was being targeted by the intervention). There was a statistically significant positive correlation between the primary and secondary participants' effect sizes,  $r(14) = 0.3365$ ,  $p = 0.002$ , such that improvements in procedural fidelity were associated with improvements in participant behaviour. However, this needs to be interpreted cautiously given that it represents a relatively weak effect size.

*Effect sizes of interventions.* Effect sizes were further examined across different interventions. This was complicated by the fact that interventions were often used in combination with other interventions rather than being used in isolation. Across the 19 studies that used a single-case design, a single intervention was used in 11 out of a possible 32 intervention phases. The combination of interventions used and their effect sizes are displayed in Table 8.

**2.5.3.9 Quality assessment.** The Reichow et al. (2008) quality assessment was carried out on all 19 studies. Two (10.5%) of the studies were found to be strong (Flynn & Lo, 2015; Vince Garland et al., 2016), five (26.32%) were adequate (DiGennaro et al., 2005; DiGennaro-Reed et al., 2010; Miller et al., 2014; Pelletier et al., 2010; Pollard et al., 2014), seven (36.84%) were found to be borderline adequate (Belfiore et al., 2008; Coolican et al., 2010; Courtemanche et al., 2014; Ingersoll & Wainer, 2013; Maginn et al., 2014; Mouzakitis et al., 2015; Weinkauff et al., 2011), while five (26.32%) were found to be weak (Coddling et al., 2005; Coddling et al., 2008; DiGennaro et al., 2007; McKenny & Bristol, 2015; Plavnick et al., 2010).

**2.5.3.10 Correlation between NAP and quality rating.** Pearson's  $r$  correlation was conducted to determine if there was a relationship between the primary participant effect size and the quality of the study. There was a statistically significant but weak positive correlation between the primary participant effect size and the quality of the study:  $r(14) = 0.226, p = .002$ . such that larger improvements in procedural fidelity were associated with higher quality of the study and vice versa. However, this needs to be interpreted cautiously given that there was a weak effect size.

Table 8: Intervention combinations and effect size

INTERVENTION		Belfiore et al. 2008	Codding et al. 2005	Codding et al. 2008	Coolican et al. 2010	Courtemanche et al. 2014	DiGennaro et al. 2005	DiGennaro et al. 2007	DiGennaro-Reed et al. 2010	Flynn & Lo. 2015	Ingersoll & Wainer. 2013	Maginn et al. 2012	McKenney & Bristol 2015	Miller et al. 2014	Mouzakitis et al. 2015	Pelletier et al. 2010	Plavnick et al. 2010	Pollard et al. 2014	Vince Garland et al. 2016	Weinkauff et al. 2011	INTERVENTION EFFECT SIZE			
																						Used in isolation	Used as part of a package	
1	Feedback		X	X		XB, C	XC	XB, C, D	XB				X	X	XB	X		X	X	X		MEDIUM M=70.83%	STRONG M=94.85%	
2	Role-play					XB, C	XC			XB		X	X			X		X					STRONG M=97.07%	
3	Modelling						XC	X	X A, B	XB		X	X						X	X		STRONG M=98%	STRONG M=99.10%	
4	Self-monitoring	X													X A, B	X	XB			X		STRONG M=96.54%	STRONG M=96.73%	
5	Quiz/assessment					XA													X	X			MEDIUM M=97.33%	
6	Teaching & instruction									XB		X							X	X	X		STRONG M=100%	
7	Financial incentive					XA, B, C								X									MEDIUM M=85.5%	
8	Goal-setting							XC			X												MEDIUM M=90.36%	
9	Observation		X	X		XB, C							X			X		X		X			STRONG M=94.85%	
10	Negative reinforcement					XB, C	XC	X D															STRONG M=94.93%	
11	Behaviour Skills training				X	XA	X A	X A		X A, B	X	XB					X A						STRONG M= 97.1%	MEDIUM M=78.5%

### **2.5.3.11 Maintenance, generalisation and social validity**

*Maintenance.* Only seven (37%) studies assessed for maintenance (Belfiore et al., 2008; Coddling et al., 2005; Coolican et al., 2010; DiGennaro-Reed et al., 2010; Ingersoll & Wainer, 2013; Maginn et al., 2012; Vince Garland et al., 2016). The maintenance probe times ranged from 1 week follow up to 4 months. Of the seven studies assessed, all reported evidence of maintenance in all primary participants.

*Generalisation.* The assessment of generalisation was described in 2 (11%) studies (Flynn & Lo. 2015; Mouzakitis et al., 2012). In both studies, generalisation was assessed across other people and generalisation was achieved.

*Social Validity.* Thirteen (68%) of the studies assessed for social validity (Coddling et al., 2005; Coddling et al., 2008; Coolican et al., 2010; Courtemanche et al., 2014; DiGennaro et al., 2005; DiGennaro et al., 2007; DiGennaro-Reed et al., 2010; Flynn & Lo 2015; Maginn et al., 2012; McKenny & Bristol, 2015; Miller et al., 2014; Pollard et al., 2014; Vince Garland et al., 2016). Only four (30%) of these studies used standardised questionnaires, (DiGennaro et al., 2005; DiGennaro et al., 2007; DiGennaro-Reed et al., 2010; Maginn et al., 2012) while the other studies used surveys or questionnaires developed by the authors. All studies included an element of a questionnaire or study and all reported positive outcomes for participants.

## **2.6 Discussion**

The current review's findings suggest that there are several ways to improve procedural fidelity, with 100% of studies showing some increase in procedural fidelity following intervention. Notably, however, the level of improvement was not consistent across studies and follow up and maintenance was only measured in 37% of the studies (Belfiore et al., 2008; Coddling et al., 2005; Coolican et al., 2010; DiGennaro-Reed et al., 2010; Ingersoll & Wainer, 2013; Maginn et al., 2012; Vince Garland et al., 2016) so it is not possible to determine if the interventions were effective for long term implementation.

The systematic review examined interventions used to improve the level of procedural fidelity with which professionals and carers implement behaviour support plans and/or skills training programmes for individuals with ID. Twenty studies published between 2004 and 2016 were included in the review. These researchers identified that to have effective services, front line staff and managers needed to be accountable for their actions and the support they provide. Recording of targets such as engagement in meaningful activity and social behaviours were recognized as means to monitor quality of support (Mansell, Elliott, Beadle-Brown, Ashman, & Macdonald, 2002). The body of literature identified in this review is more explicit in its outcomes and targets for monitoring quality, with the accuracy of implementation of a specific support plan being the end goal. The interventions and techniques identified in the review are similar to interventions used in older literature, such as feedback, training and assessment, however the identified studies have a much narrower focus. Moving forward it would be valuable to combine these two methods of research, using the detailed measurement of procedural fidelity to assess the effectiveness of interventions on staff performance at an organisational level.

This review identified that most participants were teachers or paraprofessionals, with parents being included in only two studies (Coolican et al., 2010; Ingersoll & Wainer, 2013). Across all studies, only one included a clinician (McKenny & Bristol, 2015) and this participant was a speech and language therapist. Within the literature, the focus on correct implementation of behavioural interventions is very much on the frontline staff member or parent's training, with no exploration of how managers and clinicians could improve or change his/her practice. This is despite the fact that most residential facilities provide services within a model that requires three levels of staff: direct-care, front line staff; specialised clinicians who design the programmes and treatments; and managers or supervisors to oversee the work (Saunders & Spradlin, 1991). Research is only conducted which measures the behaviour change of the

frontline staff, but it would be valuable to measure the behaviour change of clinicians and managers during training and feedback stages of interventions to determine if they become more skilled at these techniques and if this impacts the frontline staff. The clinicians and managers provide the support to the frontline staff, so their behaviour and input is a critical part of the environment the front line staff work in.

Children made up the largest age group for secondary participants and only 2 adults were included as participants across all the studies. Surprisingly, none of the studies in the review were conducted in a residential setting for adults with ID. The main setting for the studies was in schools and educational settings, with a focus on academic skills and behaviours. This is surprising considering the huge amounts of money paid out across the world for adults with ID who live in residential settings; £5.3billion per year in the UK (NAO, 2015) and €371 million per year in Ireland (HSE, 2009) and highlights the need for research within this area.

The participant behaviours targeted for change in the studies were a balanced mix of reducing problem behaviours (47%) and increasing or teaching new skills (53%). The most commonly applied intervention for improving procedural fidelity was feedback, used in 21.7% of studies as an individual intervention and used in 13.3% of studies as part of a behavioural skills training package. However, there were inconsistencies across studies about the definition of feedback. Types of feedback included verbal feedback, written feedback, immediate or in-vivo feedback and delayed feedback. Most feedback was delivered by a supervisor or the researcher but peer feedback was also included in one study.

An interesting point to note is the strength of the effect sizes for each group of participants. The effect size of the primary participants' intervention was mainly strong with 78.13% of effect sizes recorded as such. Only 2.7% of the primary participant effect sizes were recorded as weak which would suggest that the interventions implemented were effective in increasing the accuracy with which staff were implementing behavioural interventions. In

contrast to this, most secondary participant effect sizes (63.16%) were recorded as being of medium strength. The lack of weak effect sizes in the interventions may suggest however, that there is an element of publication bias in determining how studies are chosen.

The quality of studies reviewed is also noteworthy, with 63.16% of single case design studies falling into weak or borderline adequate ratings and only 10.5% of studies being rated as strong. This highlights significant quality issues within much of the treatment fidelity literature. This is reflected in the fact that only 31.6% of studies assessed for maintenance and only 10.5% assessed for generalisation of behaviour change. As these key quality indicators have been omitted in so many cases, it is difficult to predict if the interventions and techniques applied would be successful in different settings or with a different population. However, it is important to note that there was a statistically significant positive relation between quality of the study and the primary participant effect size. This suggests that the higher quality studies were more likely to produce larger effects although the effect size was weak and should be interpreted with caution.

There was a positive correlation between the primary and secondary participant effect sizes suggesting that high level procedural fidelity for staff is associated with higher treatment effects for participants. This finding is consistent with previous research (DiGennaro et al., 2007; Vollmer et al., 1999; Wilder et al., 2006) that suggested that an intervention will be more successful if it is carried out with high fidelity. This finding suggests that it would be valuable to establish methods of delivering interventions with high fidelity, on a consistent basis, across staff and carers to ensure participants receive the best possible outcomes. However, the effect size recorded was weak and so should be interpreted with some caution. Other variables may need to be taken into account such as age of participant, participant diagnosis, number of sessions during which data was recorded, staff experience, level of training etc. While this is a small sample and a small effect size, it does suggest the need to work to improve treatment



fidelity. Further exploration into factors that contribute to low levels of procedural fidelity would be valuable to identify areas for improvement or change within human service settings.

The current analysis was limited in some ways. By only including individuals with ID, the review may have missed studies conducted with other populations that require behavioural input and may have broadened the age range slightly. These could include young offenders, dementia patients, individuals with mental health issues and typically developing children (particularly for interventions for skills acquisition). It may be possible to learn more about procedural fidelity by conducting future reviews of intervention in this area for other populations. However, the scope of the study was also limited by the fact that many of the studies failed to report outcome data for secondary participants. To understand the body of literature as it applies to individuals with ID, the outcomes for these individual participants would be necessary to conclude on the impact the interventions have on participants. The limited participant outcome data also made it difficult to draw conclusions about the effectiveness of particular interventions.

Moving forward, one of the most important factors to bring to procedural fidelity research will be the greater assessment of maintenance and generalisation following intervention. In order for procedural fidelity to be high and consistent across settings, participants and behaviours, it will be essential to programme for these from the beginning. There is also a clear lack of group design studies and research aiming to improve treatment at an organisational level which needs to be addressed in order to have more effective services and better outcomes for all participants.

It is also clear from the current review that the interventions applied are effective and successful in improving procedural fidelity, but the combination of interventions and how they should be selected is less clear. Feedback and observation were by far the most widely used interventions, but this is possibly due to the fact they are convenient, cheap and easy to use.

They both had strong effect sizes on procedural fidelity, but so did other interventions which would be more time consuming and costly and so may not have been included in as many studies. The strongest effect size noted was teaching and instruction, which had a consistent score of 100% effect size in each programme it was included in. This is, however, a particularly time consuming intervention which requires expertise and resources. Moving forward, it would be important to explore these costlier interventions to investigate how they can be used in a larger context to yield positive results for staff and participants.

In conclusion, there are several studies that highlight how procedural fidelity can be improved in various settings. Feedback is an intervention that has been shown to be effective and is currently being employed in other models to ensure high quality standards such as the Periodic Service Review (PSR) (LaVigna, Willis, Shaull, Abedi & Switzet, 1994). The majority of research is currently with children in school settings and it will be important to expand the populations that are worked with. Studies are relatively weak from a quality perspective with many not including vital assessments for generalisation and maintenance. This will need to be rectified to develop a system for ensuring high level procedural fidelity across organisations. It will be important to look at group and organisation wide studies to develop strategies to ensure procedural fidelity across services in a cost effective and consistent manner.

## **Chapter 3: Procedural fidelity in residential services; perspectives of front line staff, management and clinicians**

### ***3.1 Chapter overview***

The previous chapter's systematic review into methods to improve procedural fidelity of behavioural interventions in human services highlighted a number of gaps in the literature. These included a lack of research in adult services with no focus on the behaviour of the clinician or manager in the delivery of behaviour support plans. The majority of studies identified in the review were conducted in structured settings such as schools and clinics. It was also noted that very few studies programmed for maintenance or generalisation in their research with frontline staff. As such it was concluded it will be valuable to explore the staff's perspectives and understanding of procedural fidelity to ensure barriers and challenges can be addressed to allow for generalisation and maintenance in real life settings. The current chapter reports on a qualitative study, which involved interviewing staff members from a number of intellectual disability services in Ireland about their perspectives of procedural fidelity and behaviour support.

### **3.2 Introduction**

Wolery (2011) highlighted that there is little evidence that frontline implementers of behavioural interventions can and do deliver interventions as intended, without significant support from researchers. While there is evidence that interventions can be delivered with high procedural fidelity in an organisation-wide format, with high levels maintained across large numbers of staff, these studies have all been conducted in schools. There is little research into improving procedural fidelity in adult services for individuals with intellectual disabilities despite the huge financial cost for governments and organisations supporting individuals with challenging behaviours. There is a possibility that the lack of structure in many residential

services makes it extremely difficult for staff to implement behavioural interventions with consistency in these settings.

It has been argued that the failure of human services to consistently deliver quality of life outcomes and interventions delivered with high fidelity, lies within the organisational processes underpinning frontline management and leadership practices (Mansell & Beadle-Brown, 2012). Most residential services in Ireland work within a three-tier staffing structure to deliver frontline behavioural interventions. This service model includes the frontline staff members, the clinician, and the frontline residential manager. However, all research identified in the systematic review focused solely on the frontline staff member's training and experience of implementing interventions. It is worth considering the range of influences operating on different groups of staff and how they might support or act as barriers to fidelity.

The first set of influences is a result of the governing bodies involved in ensuring quality and safety in services. Residential disability services for individuals with intellectual disabilities in Ireland have been subject to regulation by the Health Information and Quality Authority (HIQA) since 2013. The Irish government has committed to moving people from congregated settings to community-based settings within a seven year period, and is committed to creating organisational and culture change across the disability sector (HSE, 2011). These changes have been created in a top-down manner, with organisations being required to conform to HIQA standards within a set time period, or risk not being registered or being shut down. As of 2017, 812 designated residential centres were registered with HIQA, with a further 178 centres not displaying enough compliance with standards to be yet registered.

A 2018 overview report by HIQA highlighted that the huge amount of paperwork that frontline staff are required to complete has had an impact on frontline services, and interaction with service users. They reported that residents felt the amount of paperwork was preventing staff from being able to spend time with them and that the amount of rules and regulations in

place made their home environment too restrictive. It is worth noting the irony of this finding, since HIQA itself is a major source of the paperwork that is criticised in the overview report. This outcome has also been a long-standing finding in intellectual disability research (Mansell & Elliot, 2001). It is likely that these factors would have an impact on the level of procedural fidelity of interventions, as staff may need to spend a lot of time with service users in order to teach new skills or support them in new environments. The need to prioritise paperwork renders more proactive elements of PBS plans more difficult to carry out.

With regards to behaviour supports in services, the HIQA standards require that staff receive training in understanding positive behaviour supports, that trained individuals create and implement an evidence-based plan to support the individual, and that this is regularly monitored (HIQA, 2013). While these guidelines are an excellent beginning, in practice they prove to be quite vague. No exact level of training, no exact level of expertise required and no exact monitoring timeline are specified, leaving a lot of flexibility for services. This poses a risk for priority to be placed on other areas of the standards such as health and safety which are extremely detailed in how, when and to what standard they should be carried out.

While governing bodies have an impact on staff implementation of behaviour support plans, the organisation in which they deliver services has a possibly greater impact. Reily and Frederiksen (1984) discussed the nature of human services, highlighting that the public image may be positive with non-specific global mission statements and goals, while internally, the message is safety, adherence to governing body standards, and managing service users behaviours rather than developing skills and creating new opportunities.

As mentioned previously, organisational culture can have a massive effect on the quality of service delivered by frontline staff (Mansell & Beadle-Brown, 2012). There is evidence that staff's perceptions and opinions of individual service users, and the service that supports them, will impact upon how they work with them. Bigby, Clement, Mansell and

Beadle-Brown, (2009) reported that staff assumptions about the service users will impact on how they speak to them, their likelihood to advocate for change, and their attitude to them in the community. They reported that staff made statements after receiving behaviour support training such as “it’s not realistic” and “it won’t make any difference”. It was recommended that attention must be paid to staff’s understanding of organisational principles, and how to apply them so as to ensure that service users will have the opportunity to receive the services they needed for a high quality of life. This finding is extremely important when related to procedural fidelity since it suggests that staff will be unlikely to try to implement the plan if they feel the person will not succeed.

Currently in Ireland there are, therefore, a number of challenges to delivering positive behaviour support with high fidelity. However, there is no research investigating how to make it more likely for staff to implement support plans with high fidelity in real life, residential settings. Before beginning this research, it would be helpful to understand the specific challenges faced by different groups of staff to inform a system-wide intervention. The current study aims to explore further staff’s perceptions of procedural fidelity, and how behaviour interventions are implemented in their day to day jobs. The study will include three different groups of staff; clinicians, frontline managers, and frontline staff to assess perceptions from the different roles involved in developing and implementing behaviour support plans with high procedural fidelity.

### **3.3 Methods**

#### *3.3.1 Design*

A qualitative approach was used. A major strength of a qualitative interview method is that the face-to-face interview with participants allows the interviewer the opportunity to acquire extensive and relevant data (Marshall & Rossman, 1989). Semi-structured interviews were chosen as a method to collect data as they are a reliable way of gathering information

from participants with whom the researcher will only have the opportunity to meet once. This method also ensures that certain topics are addressed in the interview process, while allowing some level of freedom to gather information relevant to the individual participant (Rabionet, 2011).

### *3.3.2 Sampling and Participants*

Participants were recruited in groups of three from each organisation: one clinician (psychologist or behaviour specialist), one house manager, and one frontline staff member, and each was provided with an information sheet (Appendix A) before providing consent. All members of the triad were involved in working with the same resident to enable the researcher to draw comparisons on the perspectives of the process involved in implementing the same behaviour support plan. Convenience sampling was used to recruit participants. A total of fifteen participants (i.e. five triads) were recruited from five adult disability services in Ireland. Demographic information was gathered using a questionnaire prior to the interview. These are provided for the overall sample to protect anonymity of the participants. Eleven females and four males took part in the study. The average age of participants was 39.25 years (range 25 – 56), and the average length of time they had been working with people with challenging behaviour was 15.1 years (range 7 months – 25 years). All participants had a minimum qualification of a Bachelor's degree.

### *3.3.3 Measures*

Semi-structured interviews were designed and conducted based on Rabionet's (2011) six stages of conducting a semi-structured interview. The interview was designed by the researcher in consultation with her supervisors, with the aim of focusing the participant on five key topics and themes in their work with individuals who display challenging behaviours: the participant's experience working with individuals with challenging behaviours; experience and understanding of the development of behaviour support plans; understanding of procedural

fidelity; opinion on the level of procedural fidelity in their day to day practice; and perceived barriers to achieving high procedural fidelity in their practice (Appendix B).

### *3.3.4 Procedure*

Ethical approval was received from the Tizard Centre Research Ethics Committee (Appendix C) in addition to organisational ethics committees where relevant. The researcher identified a number of organisations that would be suitable to take part in the study. Several service managers in various adult disability services in Ireland were contacted via email with a brief description of the study in order to assess interest in participating. Once a service manager agreed in principle to take part in the study, it was necessary to apply for ethics approval from three of the organisations' ethics committees. Two of the organisations accepted the Tizard Ethics Committee approval. When ethical approval was received, consent was obtained by the service manager from the service user (someone who lived in a residential home for individuals with intellectual and developmental disabilities, has a behaviour support plan in place for behaviours that challenge or for acquiring new skills, and has regular contact with a behaviour support specialist) for the researcher to speak with their support staff. The manager was given a participant information sheet (Appendix D) and consent form (Appendix E) which were written in accessible format for this. When consent was given by the service user, the researcher approached the frontline staff and clinician to explain the study, and to gain their consent.

After consent was obtained from each member of the triad and the service user, the researcher arranged a suitable time and location to carry out the interviews. All participants then took part in an individual 1:1 semi-structured interview which lasted an average of 28.5 minutes (R, 25.3 mins – 38.6 mins).



### *3.3.5 Data analysis*

The interviews were audio-recorded using a Dictaphone and were later transcribed. Transcripts were analysed using thematic analysis, a qualitative method used for “identifying, analysing and reporting patterns (themes) with data” (Braun & Clarke, 2006, p.6). The researcher followed Braun and Clarke’s (2006) six step guide to analysing data. Initially the researcher became familiar with the data. This involved transcribing the data, and then reading while making some notes. During transcription all identifying details of participants were removed from the transcript, and all service users who were discussed were given pseudonyms. Following this the researcher began to develop initial codes. During this phase, the researcher began to examine the transcripts in four separate groups: all transcripts together, clinician transcripts only, manager transcripts only, and frontline staff transcripts only.

The researcher then began to identify themes that were emerging from the identified codes. The researcher developed a thematic map to analyse these themes, and used this map for the fourth and fifth phases of the analysis which were reviewing the themes with the rest of the research team, and defining and naming the themes. During these phases a number of themes were identified that were overlapping so these were refined and broken into more overarching themes with some sub-themes. Finally the researcher then engaged in phase six, writing up the report.

### *3.3.6 Reflexivity*

The researcher acknowledged the possibility that her own personal preconceptions may have affected the design of interview questions, and the interpretation of the data during the analysis stage. The researcher has worked in organisations similar to those the participants were employed in as a frontline staff member, a frontline residential manager, and a behaviour specialist, and was aware that personal experiences could produce leading questions, or focus on similar experiences during the interviews. To avoid this, key questions were designed to

maintain a structure, and these were developed with the research team. Following the interviews, the researcher listened to each interview within 3 days, and wrote a reflective account, while the transcription process took a number of weeks. The reflective accounts were then used to discuss the analysis process with the rest of the research team.

### 3.4 Results and Discussion

#### 3.4.1 Themes

There were a number of dominant themes that emerged across the different participants which have been summarised and classified into three distinct themes. Each theme had a number of sub-themes. All themes and sub-themes are listed in Table 9.

Table 9: List of identified themes and sub-themes

Theme	Sub-theme
Institutional culture	Inappropriate housing placements Power divide between frontline staff and clinicians Priorities of organisation governed by outside body Focus on restrictive practice
Accountability	Clinicians are not accountable Levels of challenging behaviour as a measure of procedural fidelity Accuracy and consistency are important but cannot be sure it's happening
Theory vs Practice	Inconsistencies in narratives from different staff about process of developing support plan Inconsistencies in narratives from different staff about training and implementation of plan Functional analysis is best practice, but we are not doing it Regular reviews are a great idea
There's nothing positive about behaviour support	Feedback in a crisis Frontline staff under pressure Behaviour centred plans Where is the progress?

The following section outlines the main themes and sub-themes identified through analysis of the interview transcripts.

### **Theme 1: Institutional culture**

This theme is reflective of the reports of the participants regarding the structure and policy of the organisations they worked in. Bigby, Knox, Beadle-Brown, Clement and Mansell, (2012) refer to institutional culture as the alignment of power holders' values, regard for residents, perceived purpose, working practices, and orientation to change. Participants discussed the difficulty of being powerless to change environments due to senior management decisions, and highlighted a clear hierarchical divide between clinicians, managers, and frontline staff: the three people who need to be working together to ensure success of support plans.

#### *1.1 Inappropriate housing placements*

Eleven participants discussed the fact that service users were placed in settings that were completely unsuitable for them, where they were unhappy, and unable to engage. They highlighted the fact that if the environment is not suitable, a positive behaviour support plan will not be successful.

*“She’s really miserable living here. She’s just really unhappy living here. And that’s impacting on other people, so staff – there’s nothing they can do about that.”* (Frontline 3)

*“But you see, there’s no point again if the environment isn’t right. I mean staff can’t follow a plan that needs a quiet space and low lighting, if the person lives with six other people and they all love rock music. You know?”* (Clinician 1)

They highlighted the fact that living with people with whom you do not choose to live, or with whom you cannot get along, can have a major impact on behaviour and motivation to take part in the house community.

*“(At family home)... she’s got the remote control and the can of Diet Coke, and it’s like she’s the queen for the week. And then she comes in here and she’s expected to share with five other people..... she’s displaying some behaviours....And that’s nobody’s fault. It’s certainly not her fault” (Clinician 3)*

*“We’re all about supporting a person where they want to live. So, the problem is a parent, her mam, dies. She’s isolated (in her community) and there’s going to be problems. She’s not going to be able to live independently on her own. She finds it very hard to cope living with other people, but unfortunately she has to be supported here for safeguarding reasons.” (Frontline manager 4)*

Solutions to this were put forward and some success stories were discussed by the participants. These solutions involved advocating for the individuals, and challenging the organisation policies.

*“When I started, Emma was living with a couple of other people, and we felt that her tolerance of other people was pretty low, and that wasn’t going to change. You know? And so, we would have very strongly advocated for changes to the service design, and we’ve been very lucky in that, and strategic in how we went about things. So, we kind of refuse to get involved unless certain circumstances happen, unless we’re given a certain level of resources, and that kind of commitment for the service to change. So yeah that was hard initially, but once we had a suitable environment it was always going to be easier for the plan to be implemented.” (Clinician 1)*

*“They (frontline staff) can pass that on, they can inform people, they can advocate, they can do all of that, but actually it’s not in their giving to move people, or, you know?” (Clinician 3)*

It was clear from the responses that advocating for change is not an easy thing to do. People require “strong” managers and there is a sense that staff may be pushing on a closed door at times.

### *1.2 Power divide between frontline staff and clinicians.*

The language used by participants to describe the relationship between clinicians and frontline staff was notable. The terms pass “up” to clinicians and “down” to frontline staff were employed a total of 23 times throughout the fifteen interviews.

*“Well they (clinicians) come **down** to see us and tell us the plan. When we give feedback to the PIC it goes back **up** and then they send out the finished plan.”* (Frontline staff 2)

*“The clinicians might not come out after an incident, but they will usually send some suggestions **down** to us after we send an incident report **up** to the psychology department. Usually pretty quickly”.* (Frontline manager 3)

Participants also commented on the struggle between clinicians who write the report and frontline staff who implement it. Frontline staff know the person very intimately and may have a different view of what will work than the clinicians.

*“If somebody feels they know better, they often won’t implement”* (Clinician 2)

*“That’ll never work, I’m not doing that”:* (Clinician 4)

*“If people aren’t in agreement with them, they’re not going to implement them”* (Frontline manager 3)

*“You put everything in, you have incident reports and all, but... I never actually got any feedback. I was wondering now, who actually gets that, who sees it?”* (Frontline staff 4)

During three of the interviews there was a suggestion that frontline staff would face negative consequences if they chose to disagree, or not implement the plan as directed by a clinician. One clinician referred to a person who disagreed with the recommendations. When asked to

clarify how this situation was resolved, the response was “*just encouraging.*” The clinician raised her eyebrows and stressed the word ‘encouraging’ at this point. When asked by the researcher what this meant, she would not elaborate, but said that the person then followed through with the plan after being “encouraged”. Similarly a second clinician described quite a punitive system that was in place for placing accountability on frontline staff.

*“They’re all written the same way, they’re all written on that template which basically says everyone has to follow this. If they don’t they will be consigned to deepest hell…… I’m not the only clinician, and we aren’t the only clinicians to have found that support plans were being put in place and staff were going, that’ll never work. I’m not doing that. And unfortunately, then they wouldn’t be followed, and then sometimes you would find that people hadn’t even read them. And that was a problem. So that’s why we instituted this very kind of harsh process.”* (Clinician 4)

Frontline staff discussed differing levels of support from clinicians once plans were written up. Some staff found there to be adequate support, while others felt once the plan was handed over, they were on their own, and they did not feel comfortable approaching the clinician for help.

*“I don’t feel there has been a whole lot of support from the psychologist since the PBS was drawn up.”* (Frontline staff 2)

*“I haven’t heard anything from the clinical team about the positive behaviour support plan that needed to be reviewed September last year. And I hadn’t even started then. So it’s not – it seems, like, it’s not top priority. So, I think it could be supported better, and we could be supported better too.”* (Frontline staff 3)

*“She’s (clinician) not exactly approachable”* (Frontline staff 4)

### 1.3 Priorities of organisation governed by outside body

Participants from all groups of staff discussed the pressure of ensuring the Health Information and Quality Authority (HIQA) standards are met and maintained. The main focus

of these standards is on the day-to-day running of a residential house: fire safety, medication management, financial audits etc. They described how the time needed to comply with HIQA paperwork would take away from time that could be spent with service users, and focusing on proactive strategies in their positive behaviour support plans.

*“with this organisation in the last two to three years it’s been such a focus on paperwork.....Aw, it’s crazy. And then people feel like, do you know, you come on shift and then it’s assessment of needs and do you know, it’s nice to just go for a walk with somebody or go down and have a coffee or sit and do some knitting or, you know, whatever it is that’s not needing to be goal-driven or service-orientated, that’s just, like – this is a residential... this is people’s home (sic). You should be able to come and not have everything documented, and forms ticked.”* (Frontline 3)

*“I don’t know if it’s because we have a manager who is hugely focused on the paperwork, and no matter what happens, it’s HIQA, HIQA, HIQA, HIQA. And I’ve never worked with that before. And he’s a very good manager. But the pressure of that is huge.”* (Frontline 2)

It was evident in seven of the interviews that staff are often bound by HIQA regulations when it comes to making every day decisions, which can be extremely difficult in unpredictable situations.

*“whatever you write down, and whatever is there, they come and see and say, what’s that? where is the follow up to that? Where are the guidelines for that? Why was that there? And then that goes and gets published. Everyone can see it. It is there. It’s a big thing. And if staff don’t have everything 100% okayed, and they’re working on their own gut. And they’re going, am I in line here with HIQA? And they’re going to come and do a spot check. Have I signed off on something that maybe I shouldn’t have?”*  
(Front line staff 2)

One clinician also stated the difficulty is in remembering that there is a person at the centre of the support plan, and that it is not just an exercise to comply with outside standards.

*“it’s really around putting the person at the centre of that, and trying to be as true to them as possible, you know, so that you’re not designing something for HIQA, or for external bodies, or for people to come in and say, “oh, that looks great.” You’re actually saying, “it’s for this person, and this is what they genuinely need.” (Clinician 3)*

All participants from one organisation discussed the pressure of having to wait for funding from an external body (The Health Service Executive, HSE), and how this had a major impact on their ability to deliver effective services.

*“we eventually went to the HSE and said we can’t sustain this. She has to go somewhere else. HSE said there’s nowhere else for her to go, so they fund us, and a whole new thing grew from that” (Front line manager 5)*

*“She needs the funding from the HSE for the staff, and that’s the piece we’re waiting for” (Clinician 5)*

#### *1.4 Focus on restrictive practices*

All groups of staff focused on the restrictive practices in place for the support plan, rather than on the proactive strategies and skills teaching. HIQA defines ‘restrictive practice’ as anything that “limits an individual’s movement, activity or function, interferes with an individual’s ability to acquire positive reinforcement, results in the loss of objects or activities that an individual values or requires an individual to engage in behaviour that the individual would not engage in given freedom of choice” (HIQA, 2016, p.4). The staff focus was on the reactive strategy of the plan, (i.e. what to do if the behaviour occurs) as opposed to proactive strategies (i.e., ways to make the environment more suitable, and teach the individual different ways to manage situations).



*“So, some restrictions would have had to be put in place, again that the other service users wouldn’t require. Like a locked front door, and that would have been anathema to the guys who live there. But unfortunately, they didn’t have any say.” (Frontline manager 4)*

*“We got okayed to lock the doors. There was thought process into the fire doors being locked after that. And that was supposed to limit Steven’s environment when he’s in that zone. And it means we can cut off the house from his room up, which means it’s going to limit him getting into the rest of house. Which means we don’t have to lock up the laundry, the kitchen, and everything else that other people need access to. So, a lot came from it. The fire doors are an absolute life-saver. They are brilliant. They have really helped.” (Frontline staff 2)*

Participants talked about the restrictive practices as an integral part of support plans, following to the letter directions for how long doors could be locked, and how many behaviours should be displayed before medication needs to be given.

*“So if you lock the door, you’re locking it for 15 minutes and you open it up. A few inches, OK. You feel after 15 minutes it still needs to be locked, you justify and record. It’s all reported and monitored, safeguarded.” (Frontline manager 2)*

*“Locking the front door. Accessing coming in, but you can’t get out. Safety for ourselves, closing off this area, and the whole idea was that she couldn’t get out” (Frontline manager 5)*

There was no mention of skill building across the 15 interviews, and developing methods to reduce the restrictive practices for these individuals.

## **Theme 2: Accountability and understanding of procedural fidelity of behaviour support plans**

During each interview participants were asked what their understanding of procedural fidelity was. Ten participants said they did not know and the five clinicians who responded gave an incorrect response.

*“It’s a bit like a person-centred process……like their quality of life”* (Clinician 2)

*“Making sure the plan is fitting for the individual”* (Clinician 4)

Following each of these exchanges the researcher gave a breakdown of a definition of procedural fidelity, and its application in research and clinical practice.

### *2.1: Clinicians aren’t accountable*

This sub-theme draws on information taken only from the clinicians who took part in the interviews. All five participants discussed on some level how once they had finished writing a plan, they had no real way of monitoring if support plans were run with fidelity. When asked how they knew staff are following the plan consistently, the clinicians gave responses that suggested a lack of accountability.

*“Yeah, well, I don’t”*: (Clinician 1)

*“I’m not sure I can answer that. A PIC (person-in-charge) is much better placed. They’re on the ground. They know if they are following through or not. I can go to a meeting and they can all say, oh we did exactly what the guidelines said. But I don’t know whether they did.”* (Clinician 2)

Two clinicians distanced themselves from the responsibility for monitoring procedural fidelity since they were contracted in by the organisation, and were not permanent staff members.

*“Given the particular position I am in here……. I don’t have any great input into policy here……. I don’t have any power, executive power.”* (Clinician 4)

*“I haven’t been made aware of that (people not following guidelines)”*. (Clinician 5)

## 2.2 Levels of challenging behaviour as measure of procedural fidelity.

There was an agreement across all fifteen participants that staff testimonial was enough to determine if a plan was being implemented accurately, and decisions about changes to the evidence-based plan could be made based solely on this.

*“(The support plan) is reviewed on the basis of the support workers’ input, and staff saying this isn’t working any more, or that doesn’t make any sense any more, or we have to put in a restrictive practice. So a restrictive practice is put in”* (Clinician 2)

All participants, despite having just received an explanation that procedural fidelity was the accuracy of implementation of a plan, discussed how the number of challenging behaviour incidents could be used as a measure of procedural fidelity.

*“I suppose the only way, is reflecting on the amount of incidents that have reduced over the years.”* (Front line manager 1)

*“Well I suppose the only thing would be the record sheets you know. We get people to record incidents”* (Clinician 3)

*“We wouldn’t have many ABC incidents recorded. So, to me I think that was obviously a way of showing everybody’s doing the same thing, and that the plans are working”* (Frontline staff 1).

## 2.3 Accuracy and consistency are important but can’t be sure it’s happening.

All staff agreed that consistency of implementation of behaviour support plans is essential. However, all staff also agreed that there is no way to know it is happening. Due to shift working, some staff may not see other staff for two weeks at a time, people work alone and do not get any feedback on how they are getting on.

*“When everybody works together, when they actually do it... things really do start to change, and it’s very surprising. Until you see it, you don’t know it.”* (Frontline staff 4)

*“I’m not working with someone for two or three weeks, and people are different- they might not implement it the same way, they might think they are, but they’re not you know. So, not at the moment, there’s not, not really (a way to monitor implementation)”*

(Frontline staff 1)

### **Theme 3: Theory versus practice**

Thompson (1995) highlighted that despite the high value of using theory in practice, there are often cases where this does not occur. He suggested two factors which contribute to practitioners choosing not to incorporate theory in their practice. The first of these is that practitioners might take a “common sense” approach, as they want to be more pragmatic in organisations which have resource and time constraints. The second factor which may influence why people do not carry out theory in their practice is a misinterpretation of theory, due to lack of training in the area, or difficult to understand papers written on the topic. An overarching factor which may contribute is a lack of stakeholder involvement, which will inevitably affect the clinician’s ability and motivation to incorporate theory into practice. This theme explores some instances of established positive behaviour support theory not being followed as research has outlined.

#### *3.1 Inconsistencies in narratives from different staff about process of developing support plan*

In the accounts of how support plans were developed and monitored in three different triads, there were direct contradictions of the role of the different staff members. When asked how they developed a support plan, one clinician, manager, and frontline staff member from the same team provided different responses. The following descriptions are taken from one triad to illustrate the conflicting reports and experiences of the same process.

*“I would come to a staff meeting and we would talk through how Steven is presenting, how they’re getting to know him. And then we would design a positive behavioural support plan.”* (Clinician 2)

*“There would have been observing staff interactions with Steven, and also there would have been observing Steven’s behaviour. Em, and then it would have been a collation of E-forms which would, anytime there’s an incident of challenging behaviour, one of the forms would be completed by the staff, and it would outline everything that’s done, em, and the behaviours that were presented and ..... the forms go up to [the psychologist] and we would sit down and we would discuss the plan, em, as a multi-disciplinary team, so it would be myself, it would be psychologist, em, and it would be his key worker then as well.”* (Frontline manager 2)

*“[The house manager] would have had a huge part in that. It would have been X at the time. And then there would have been the psychologist. Yeah and then we were given the plan”* (Frontline staff 2)

### *3.2 Inconsistencies in narratives from different staff about training and implementation of plan*

In some of the accounts of the training and implementation process of the plan, there were direct inconsistencies in staff recall of events. When asked about whether training on implementation of the plan was provided, one triad of participants provided conflicting responses:

*“Basically the plan, well it was the multi-disciplinary process. The clinicians are the ones who design the plan and then sent it over to us. But what we might do sometimes, because what we use in the frontline , we would have our own support really, just a summary..... we made that yes.”* (Frontline manager 4)

*“There’s absolutely no point in handing somebody a plan and saying, do that. So you sit down with staff, you work out what’s practical..... then it’s about running through it with them and making sure they’re happy with it, and reviewing it on a regular basis.”*  
(Clinician 4)

*“Well it was the best staff could do here at the time because it would be so busy, and things like that are kicking off at the time they’re saying “OK read this and see what you think about it” (Frontline staff 4)*

### 3.3 Functional analysis is best practice, but we’re not doing it.

Each organisation that took part in the study had a behaviour support policy which outlines functional analysis as best practice, however only one clinician mentioned the functional assessment process when developing the support plan.

*“We would have developed the functional assessment and the behaviour support plan” (Clinician 1).*

There was a consensus among four of the triads that data collection and reports were not being followed up on by the clinician.

*“There was loads of incident report forms, like, you know, behaviour challenge report forms regarding these kinds of behaviours, but, like, they’re still in the file. No one has read them.” (Front line staff 3)*

*“We fill in those forms every day saying this happened and this happened, and then we give them to manager. But I literally have no idea what happens to them after that. Does service manager get them? The clinician? I’ve been here six months and no one has asked me once about one of the forms” (Frontline staff 4)*

One clinician also disputed the importance of consequences of behaviour when writing a support plan, and felt that antecedents were all that was needed for a successful support plan.

*“You really have to focus on..... the antecedents. What is causing the behaviour. There’s little point doing anything about it once it’s happened..... a functional assessment is incredibly important, but focusing on the setting events and the antecedents. I’m not too bothered about the consequences.” (Clinician 4)*

### 3.4 Regular reviews are a great idea

The participants all had different understanding of the length of time that could elapse between reviews of support plans. Even people who were focused on HIQA standards were unsure about what the policy on reviews was. Responses to the question “How often do reviews of plans occur?” included:

*“It just depends really”* (Frontline manager 2)

*“I think it varies. I don’t really get into that process per se. I just come when asked. But it’s usually once a year I think, maybe two years.”* (Clinician 4)

*“But you can also say this plan must take place until the person feels, until there is a need for a review, but I do think the reviews need to be a bit more structured.”*  
(Clinician 3)

*“we meet on a monthly basis.”* (Frontline manager 1)

*“It’s constantly reviewed”* (Clinician 2)

There was general consensus that regular reviews were very important and beneficial to the behavioural support process, but when talking about when the review meetings did occur, they tended to take place after a crisis, or some sort of incident. If things were going well, reviews got pushed back, as they individual was no longer a priority.

*“she contacted me about getting it reviewed and then I said up in the meeting there to manager, and she said “Oh well, you know, em, the meetings – like, if we don’t need to have a meeting then we don’t have to because it’s hard for, you know, time and money reasons.”* (Front line staff 5)

*“You’re asked to come over and the whole thing has fallen apart, and you go, if you’d only called me in a little bit sooner we could have tweaked a few things, so I think we maybe need to build in some kind of periodic review.”* (Clinician 4)

#### **Theme 4: There's nothing positive about behaviour support**

This theme explores the idea of positive behaviour support having taken quite a negative place in day to day service provision. The participants were focused heavily on crisis intervention, and the stress and pressure that the challenging behaviours caused in their work life. Rather than person-centred-planning, a lot of plans for individuals with challenging behaviour appear to be behaviour-centred. Finally, this theme explores the lack of progress that is seen with individuals with challenging behaviours. There was little attention paid to skill building, but there was agreement about the lack of improvement that people experience when they work with individuals with challenging behaviour.

##### *4.1 Feedback in a crisis*

It was noted across all participants that the main way to feedback information about the behaviour support plan to the clinician was through the use of incident report forms, and it was after these were received, that the clinician would get in touch. When asked about when they received support from the manager and clinician, four participants indicated that they would receive support after there had been some form of a challenging behaviour incident.

*“Well, if an incident was to occur”* (Frontline staff 1)

*“Within the organisation we have what's called the critical incident review form, so if there was an incident which the resident presented with, say Steven presented with a behaviour, a new behaviour or behaviour that was specifically traumatising to a staff member..... that's then escalated to psychologist”* (Frontline manager 2)

##### *4.2 Frontline staff under pressure*

When participants discussed the experiences of frontline staff there was empathy with them, sympathy for the situation they were in and acknowledgement of the difficulty of their



job. A common message that came across was that staff can be frightened by the day to day behaviours displayed by the people they support:

*“It’s actually seeing the behaviour, and they would get quite stressed when they see how aggressive it can get.”* (Clinician 2)

*“...we’re on our own on night shifts. So, if Laura’s extra heightened, you can feel a bit like, oh my God, I wish there was someone else there.”* (Frontline staff 3)

There was a suggestion that the intensity of managing challenging behaviour can have an impact on staff’s mental health, and lead to burn out

*“sometimes for the frontline staff its mentally draining...you need a break because she exhausts you”* (Frontline manager 5)

There was also an acknowledgement that staff might not follow through on guidelines because challenging the service user, or saying “no” would take up a lot of time, or cause a scene when out in public.

*“,,,it’s just, it’s that it might be easier to give in sometimes.”* (Frontline manager 2)

*“...that would be our big thing, that when you’re out in public it would be difficult at times if we’re demanding things, and she knows that you’re under a bit more pressure because you’re in a public area, that maybe you might give in that bit quicker when there’s people looking at you.”* (Frontline staff 1)

#### *4.3 Behaviour-centred plans*

There was a concern amongst the participants that individuals who display behaviours of concern, may not have access to the same opportunities as those who do not. The main focus of review meetings and conversations tended to be on their challenging behaviours, rather than on their personal goals or targets.

*“It would be great to get out there and engage more positively, and get some opportunities, you know? But, I don’t know, we’re very focused on managing her behaviour, so we need to focus a bit more on the positive things.”* (Frontline staff 1)

Another concern was that people who have long histories of behaviours of concern may become infamous within the organisation, so staff meet them with a negative perception.

*“They’re difficult, and “Oh God, you worked in that house? Oh no, that must have been terrible..... We’re trying to get away from that kind of... people with big labels and heavy hitters, or whatever.”* (Clinician 2)

#### 4.4: Where is the progress?

Participants discussed the fact that some of the individuals they support have been involved with behaviour support for several years, with little to no progress.

*“She’s probably someone who has always featured in the organisation, you know the top heavy hitters.”* (Clinician 2)

*“(The plan was developed) about 3 or 4 years ago”* (Clinician 1)

The repetitiveness and unrelenting nature of some of the behaviours can be exhausting for frontline staff to work with, and participants highlighted the need to take this into account when developing support plans to avoid staff burn out.

*“It’s a long shift when you’re putting in a shift with her”*(Frontline staff 1)

*“We rotate staff”* (Frontline manager 3)

*“Even without major incidents happening, that kind of environment can be, on a good day, stressful. And especially in terms when you’re working long shifts as well, it can be mentally tough.”* (Clinician 1)

### 3.5 Discussion

Thematic analysis was used in this study to identify the barriers to implementing behaviour support plans with high fidelity that different staff groups face in residential services for adults with intellectual disabilities. Participants discussed their experiences of developing and implementing support plans with individual service users and from this, key themes were drawn. Staff identified the main barriers to be the culture of service organisations and governing bodies, a lack of understanding of what procedural fidelity is, and who should be accountable for monitoring it, challenges related to the quality of support plans, their content, and how they are reviewed, and finally the ongoing support that frontline staff receive. A novel contribution of this study is the exploration of different staffing groups' perspectives, drawing information not only from frontline staff, but also from managers and clinicians. An interesting finding was that in general all staff groups were in agreement about the issues and challenges they face, with differences only arising in relation to delivery of training.

Before the implications of the results are discussed it is important to highlight the limitations of the study. All fifteen participants were recruited from the greater Dublin area, with no representation from services in other geographical areas, or in different community-type settings such as rural locations. It is possible that participants recruited in other geographical areas may have had different perceptions, and experiences of implementing behaviour interventions. The study focused on frontline staff, frontline managers and clinicians, however, none of these staff members is responsible for funding, resourcing or training. So, it may have been valuable to gain insight from a higher level of management such as 'service managers' to get a clearer overall picture of implementing behaviour interventions in residential services, and the challenges and barriers to this. As mentioned previously, the different staff groups generally agreed on their opinions of implementation of positive behaviour support, with differences only emerging in relation to how training takes place.

Inclusion of the service manager may have added a different view, which would have been valuable for a complete picture.

Another limitation of the study is that most of the data gathered relates to the overall process of implementing positive behaviour support, rather than procedural fidelity specifically. Staff discuss challenges and barriers in very broad terms, and do not focus specifically on any particular elements of support plans which are difficult to implement properly. A reason for this may be the overall lack of understanding and awareness of procedural fidelity that was displayed by all participants. While all participants were provided with a definition of procedural fidelity in the information sheet, a more thorough discussion about it before beginning the interviews, may have allowed the participants to provide responses more directly related to fidelity. Despite these limitations, a number of themes were prevalent across all interviews.

### *3.5.1 Institutional culture*

The archaic institutional hierarchies from the days before modern disability policy and practices appear to continue to have some impact on current human services. People continue to be placed in congregated settings without any choice over where they live, or with whom they live and attend day services that are not suitable for them, as there are no other alternatives. Complicated management structures, again influenced by the institutions of old, make it well-nigh impossible for frontline staff to advocate effectively on behalf of the people they support in order to gain access to more appropriate housing and resources.

Another legacy from the institutions in Ireland, is the perception that clinicians are very separate from frontline staff, and do not fully understand the challenges involved in supporting individuals on a daily basis. Clinicians typically work across a number of locations, with their offices based in a separate area of the company. The lines of authority can be blurred as the clinician does not report to the house manager or service manager directly, which can lead to

confusion about who is actually responsible for the monitoring of delivery of support plans, and who has the authority to lead the frontline staff. The reality is that psychologists and behaviour specialists have no authority over any staff other than those in their direct clinical teams, e.g. assistant psychologists, and they are technically in a support role to the frontline staff. It was apparent in the interviews that all areas of staff held the perception that clinicians were very separate from the front line. There was a suggestion across the interviews that the divide between frontline staff and clinicians has caused a power imbalance with clinicians being viewed as difficult to approach, and more senior to the frontline staff. Lukes (1974) argued that power within institutions that is culturally located, sustains a bias in the system far more than a series of individual actions. By allowing this confusing structure to continue, organisations are reinforcing the idea that clinicians are very different from frontline staff. This can have a direct impact on communication, as increased tension prevents information from being shared between experienced frontline staff and clinicians, which is key to developing and implementing a successful support plan.

Outside governing bodies (HIQA and HSE) continue to control the organisational policy, so person-centred plans and supports must fit in with larger, national policy and guidelines. This is a contradiction in terms since a one-size fits all approach is impossible to implement with such diverse groups as those being supported in adult disability services. Staff and management are forced to teach people to acquiesce to what they are given, and manage the people who cannot cope with their circumstances. The frustration at these organisational constrictions was apparent across all staff who attend work every day with the desire to support people to live fulfilling lives, but regularly spend most of their time engaging in damage control, and making do with what they have. There is also a major focus on the reactive strategies of support plans, and what the boundaries of the restrictive practices are. This is possibly to do with the strict standards of the governing body HIQA, which has a major focus

on health and safety issues. Staff are so concerned about what they should do if the behaviour occurs, that they lose sight of ways to prevent the behaviour, or teach alternatives. This is a common finding across services (British Institute of Learning Disabilities, BILD, 2014) and is extremely concerning due to the growing evidence base that finds restrictive practices can increase the occurrence of challenging behaviours in human services (DOH, 2014). A focus on medical restraints in plans, with the use of the term ‘PRN’ and when exactly it could be delivered was prevalent in the interviews with the frontline staff. The over-medication of individuals with challenging behaviour (as discussed in section 1.3.5) is a worrying trend observed in many settings and countries which must be addressed urgently (Glover et al., 2014). BILD (2014) described how despite mounting evidence that restrictive practices increase the likelihood of challenging behaviour, staff were able to justify restrictive practices as a “duty of care,” and restrictive practices around people’s access to food, personal care, and movement were regularly put in place. It would be valuable to support staff in their understanding of the importance of pro-active strategies within positive behaviour support, and to provide them with clear and easy to follow guidelines to help them put these in place.

### *3.5.2 Accountability*

There is a clear absence of responsibility among anyone within these services to be accountable for the monitoring and evaluation of the procedural fidelity of behaviour support plans. This is of course very concerning, since major decisions are made as a result of the success or failure of these plans such as implementing restrictive practices, using medication, and reducing access to different amenities or opportunities (Vollmer et al., 2008) As discussed in the previous theme, there remains a major emphasis on restrictive practices in modern day behaviour support plans. The lack of monitoring of these plans, and how they are implemented, means that people may be closed in behind locked doors, may become dependent on PRN medication, and may be denied access to areas of their own homes, just because the plan in

place may not actually be being implemented at all. It would seem obvious that the author of a plan ought to be the individual who should be responsible for the monitoring of its implementation. However this does not appear to be the case here. Cook et al., (2007) found that close collaboration between teams supporting individuals with challenging behaviour were able to alleviate common complaints such as paperwork and time consumed, and this then had a direct and positive impact on increasing procedural fidelity. Unfortunately, due to the organisational structure and divides between clinical staff and frontline staff, the observation and monitoring component of behavioural support seems to have been neglected.

There was agreement amongst all the participants that measuring procedural fidelity of a behaviour support plan is something that should be done. One participant had experience of using the periodic service review (PSR) which he found to be a very positive experience, but this did not go as far as to monitor accuracy of implementation. Due to staffing, resources, structure, other service users, training etc., procedural fidelity has been overlooked as a necessary part of the positive behaviour support process, and the success of plans is being determined by the level of challenging behaviour, after the plan is written. This is in line with findings by Gresham (2004), who identified that this was how clinicians were monitoring their plans and making life-changing decisions. Monitoring a plan's effectiveness by the outcomes is extremely unreliable, and making decisions about a person's life should not be done without solid evidence about the degree of procedural fidelity (Fiske, 2005).

### *3.5.3 Theory versus practice.*

When speaking with all participants there was a clear consensus about what is best practice. All participants were well trained in challenging behaviour, the social model of disability, and have had lots of experience working in disability services. All organisations have clear behaviour support policies that each staff member has read and signed off on. Clinicians are aware that frontline staff know the service users best and should be included in

the development of the plan, however this is not being done consistently across services. Managers know that regular reviews of behaviour support plans is important to the success of the support plan and monitoring of its progress, yet they will allow review meetings to slip when things are going well in order to prioritise resources somewhere else. This may be a result of the organisational hierarchies and the influence of outside governing bodies. Clinicians and managers are required to meet certain standards, and complete certain tick box exercises as part of their jobs. Taking the time to meet frontline staff regularly and collect observation data is not a priority in the HIQA standards, and so it does not have to be a priority for staff. This would be in line with Thompson's (1995) suggestion that practitioners may try to be pragmatic, and skip one or two steps to reach the goal outlined by their organisational policy. A possible way to resolve this issue would be for organisations to make their goals and policies more specific in relation to what they expect to see as evidence of quality behaviour support.

It was also interesting that interviewing across five different triads of staff, from five different organisations, there was no agreement about how often review meetings should be held. The recommendations ranged from "constantly" to "every two years." HIQA standards are extremely vague on this as well "...interventions are reviewed on a regular basis". It may be valuable to explore a quality standard for how often reviews should occur, and in what format. For example, do reviews need to be carried out regularly with a multi-disciplinary team, or would it be sufficient to have the clinician and key worker managing the review? The second issue is what exactly is being reviewed. Staff testimonial and incident forms are reportedly the only methods to review the effectiveness of a plan. As discussed in Theme 2, there is no record of how accurately plans are being implemented, so it could be suggested the reviews are currently being carried out based on incomplete evidence. This again is extremely risky as major decisions are made based on the success or failure of these plans, and as highlighted in theme one, inclusion of restrictive practices remains top of many of the staff's agendas.



#### *3.5.4 There is nothing positive about behaviour support.*

Staff perceptions of challenging behaviour play a huge role in how staff will interact with, and support the service users they work with (Oliver, 1993). Staff presented with negative behaviours may use a technique or intervention that is not recommended, because they know it will successfully alleviate the challenging behaviour, and they will escape any immediate negative consequences (Oliver, 1993). As staff report only receiving feedback or observation after an incident of challenging behaviour, it is more likely that they can engage in their own interpretation of the plan to escape challenging behaviour, as there is no monitoring system in place. The apparent lack of positive reinforcement and feedback for staff and service users who are following plans and making progress, is a clear contradiction of what positive behaviour stands for. As attention is only focused on these individuals and staff teams when something is going wrong, the perception that the work is negative and aversive is strengthened.

Throughout all interviews, the focus of discussion and description of the service users with positive behaviour support plans was on their challenging behaviours. There was acknowledgement from one clinician that there should be more of a focus on teaching new skills, but as a team, they tend to only think of behaviour management. This has been highlighted previously by Hoole and Morgan (2013) since service users with positive behaviour support plans felt they were excluded from activities and learning opportunities due to their labels. The participants (frontline staff) reported feelings of fear and burnout in relation to some of the individuals they support. This is likely to reduce their motivation to carry out the more positive aspects of the positive behaviour support intervention, such as skills teaching. Without being taught the necessary skills, it will be impossible for the people they support to progress and begin to achieve a better quality of life.

### *3.5.6 Conclusion*

The need for more understanding of the importance of procedural fidelity of behaviour interventions is clear. To enable this to happen, more input and support needs to be provided from higher levels in human service organisations, that will allow frontline staff and managers to follow guidelines accurately. A more structured and accountable support system would allow practice leadership to be at the centre of positive behaviour support. This would ensure that frontline staff and managers have access to training, feedback, and ongoing discussions in order to maximise the levels of procedural fidelity of behaviour interventions which will improve the individual's quality of life. The communication between clinicians and frontline staff continues to be inconsistent, and at times non-existent. The implementation of an accountable structure of recording interactions and feedback sessions would improve this, and would allow clinicians and staff to deal with challenges and barriers as they arise, rather than weeks or months later when strategies and interventions may have already broken down completely.

The key aims of the subsequent research in this project (Chapters 4 and 5) are to develop an intervention to improve procedural fidelity levels of implementation of support plans in residential services. The findings from the present study and the systematic review will be used to guide the development of the intervention, to ensure the identified barriers and challenges to implementation are addressed, thus increasing the likelihood for generalisation and maintenance. As the study (and previous literature) highlighted that residential services are changeable and unpredictable environments, an initial pilot study will be conducted to determine the feasibility of the intervention and recording methods (Chapter 4) before implementing the intervention on a larger scale (Chapter 5). Table 10 provides a breakdown of how the findings from the systematic review and qualitative study guided the development of Chapter 4's pilot study intervention.

Table 10. Description of how findings of previous studies guided development of pilot study intervention

Study	Findings	Implications for intervention design	Intervention element arising from these implication
Systematic Review	Procedural fidelity can be improved	It is worth designing an intervention that aims to improve fidelity	This finding underpins all elements of the intervention
Systematic review	Feedback, observation and BST most commonly used and found to have strong effect sizes	Intervention should incorporate these elements as the systematic review suggests that both are acceptable to staff and effective	<ol style="list-style-type: none"> <li>1. BST approach used to train staff in accurate implementation of behaviour support plans</li> <li>2. Immediate verbal feedback used to provide reinforcement to staff and ongoing skill building</li> <li>3. Observation used to monitor fidelity levels and gather information for feedback</li> </ol>
Qualitative review	Feedback is only delivered to staff in a crisis	Intervention should incorporate proactive feedback so that staff do not perceive it as criticism but as constructive support	<ol style="list-style-type: none"> <li>1. Practice leadership training for frontline managers provides the skills and structure needed to deliver proactive and supportive feedback</li> <li>2. Immediate, verbal feedback provided while staff engage in BSP-related behaviours</li> <li>3. Delayed verbal feedback provided once a month during supervision sessions</li> <li>4. Observation carried out while staff are engaged in BSP-related behaviours</li> </ol>
Qualitative review	Communication between relevant stakeholders is poor	Intervention should ensure good quality communication between those writing behaviour support plans, managers and frontline staff	<ol style="list-style-type: none"> <li>1. Consultation with front line staff, managers and clinicians to review and update the BSPs to include elements for improved communication</li> <li>2. Ongoing observation and feedback to ensure quality communication</li> </ol>

## **Chapter 4: Increasing procedural fidelity of behaviour support plans in residential homes: A Pilot study**

### **4.1 Chapter overview**

This chapter reviews the outcomes of the qualitative study reported in Chapter 3 and draws on previous literature to explore how these themes are evident in current practice in human services. The focus of this chapter is a pilot study, which was designed to assess the feasibility and acceptability of intervention techniques highlighted in the systematic review and qualitative study. Previous literature relating to challenges in implementing support plans in residential services is considered. The intervention conducted in a residential home for adults with intellectual disabilities is described and limitations of the study are discussed with modifications for a future larger study suggested.

### **4.2 Introduction**

Chapter 3 highlighted the importance of procedural fidelity and established that frontline staff face a number of challenges and barriers when trying to implement behaviour support plans with high fidelity. While some individual interventions to improve procedural fidelity have been shown to be effective (Brady, Padden & McGill, 2019), the qualitative study outcomes show it is not that simple and there are clearly issues that need to be considered in real life settings. Across the four main themes identified, common barriers and challenges to high fidelity appeared. The challenges were not mutually exclusive to one particular theme and it is important to reflect on the different factors contributing to each challenge in order to ensure it can be resolved. The challenges appear to fall within three main categories: Support structure, accountability and knowledge and training of staff. Details of these categories are outlined below.

#### ***4.2.1 Support structure***

The qualitative study identified a number of challenges in relation to support for frontline staff when working with people with challenging behaviour. Within the first theme ‘institutional culture’, challenges were highlighted in relation to communicating with clinicians and more senior staff members relating to support plans. Frontline staff also reported challenges relating to communication about support plans, with one frontline staff member unsure if clinicians or managers ever actually receive the feedback they give about incidents which occur in the home. Complicated management structures resulted in frontline staff being unsure who to turn to when they required support with particular issues.

It was also identified in the theme ‘there’s nothing positive about behaviour support’ that working with challenging behaviour can present a number of issues for staff including a sense of fear for one’s own safety and observing the people they support engage in behaviours which may be traumatic and distressing. The qualitative study highlighted that at times staff can feel alone and nervous when working with people, particularly on night shifts when there is no back up or support. One of the sub-themes identified was ‘feedback in crisis’ which highlighted that meetings and reviews tended to only occur after something had gone wrong. There is evidence within the literature to highlight an association between challenging behaviour, staff stress and burnout (Hatton et al., 1998; Howard, Rose, & Levenson, 2009; Lambrechts, Kuppens, & Maes, 2009; Maslach, 2003; Raczka, 2005) therefore it is important for any service supporting individuals who display challenging behaviour to also explore means of supporting the frontline staff. While this is extremely important for staff well-being, it also is likely to have an impact on staff motivation to implement the support plans with high fidelity.

The Behavioural Systems model (Oliver, 1993) suggests staffs’ negative emotions in response to challenging behaviours could be an aversive stimulus, which may make staff

behave in a way to reduce the behaviour of concern or try to escape from it. As a result, the staff may inadvertently reinforce the problem behaviour which in turn may result in long-term maintenance of the behaviour. This was a common theme within the qualitative study as the staff reported that people felt it would be “easier to give in” to make the shift more manageable.

Currently, high quality positive behaviour support interventions should have a major emphasis on proactive strategies to ensure a person is living in the most therapeutic environment possible. This typically involves staff placing a focus on positive, support interactions with people while trying to reduce negative or more restrictive interactions. Lawson and O’ Brien, (1994) reported that when staff are unsupported and have higher levels of anxiety they are less likely to engage in positive interactions with service users and may avoid interactions as much as possible. When anxious or stressed, staff may also find it easier to simply ‘do’ things for individuals rather than giving them the space and time required to complete a task themselves. This will clearly have an impact on the levels of procedural fidelity with which plans are carried out.

#### ***4.2.2 Accountability***

Another challenge identified in the qualitative study, was the lack of accountability within services when it came to who was responsible for the monitoring of behaviour support plans and the trend for feedback only to occur in a crisis and when things went wrong. This was a major theme of the qualitative study which is likely to stem from the complicated management structures that are present in the organisations. Clinicians categorically stated in the qualitative study that they were not responsible for monitoring the implementation of plans and the ‘theory vs practice’ theme highlighted that reviews are not carried out consistently and have no set agenda or ability to provide consequences for low fidelity. It could also be suggested that the hierarchical structure of organisations results in poor communication between different layers of staff. This may mean that problems relating to resources or the

environment are not being addressed until crisis point. The qualitative study suggested that, while frontline staff and management may be well-intentioned and have sufficient training in behaviour support, organisational pressures and restrictions may prevent these individuals from carrying out guidelines as written. As there is no monitoring system in place or management focus on the implementation of plans, low fidelity of implementation can go unnoticed until an incident occurs. Frontline staff discussed how there is huge pressure to comply with HIQA paperwork with a lot of monitoring and accountability placed on this aspect of their job. The only aspect of any behaviour support plan that was discussed in relation to accountability were the restrictive elements such as when to give PRN medication or for how long a door could be locked. These elements of plans were recorded in detail, but not the more positive proactive aspects. It is notable that these more restrictive elements of plans are closely monitored by HIQA inspections due to the potential for abuse or breach of human rights. It is reasonable to suggest that the regular monitoring and feedback with regards to these elements has an impact on how motivated staff are to engage in the guidelines.

#### ***4.2.3 Knowledge and training of staff***

One major challenge identified in the qualitative study was the lack of general understanding of what procedural fidelity is and the importance of monitoring it. None of the participants were able to correctly explain procedural fidelity, including the clinicians who design plans and support staff with their implementation. While there is a possibility that some support plans may be being implemented with high fidelity, in practice, it appears that any monitoring systems which have been developed to record this, tend not be used. As such, any discussion and modifications to plans made with frontline staff and clinicians is not informed by any data on degree of procedural fidelity.

Another common challenge was the method through which front line staff are trained to implement support plans. The standard practice used in these services is to train staff in a

behaviour support plan (or meet with them to discuss it) and, expect them to implement it correctly with the challenging behaviour reducing following this. Finn and Sturmey (2009) argued that the use of verbal and written instruction is not sufficient to evoke significant behaviour change in staff. There is no previous research which displays the effectiveness of written instruction or teaching as a stand-alone intervention to improve the procedural fidelity of behaviour support plans in residential services (Brady et al., 2019). Finn and Sturmey (2009) also highlighted that written or verbal instruction alone, does not take into account the impact that working with challenging behaviour on a daily basis has on frontline staff members and the environmental contingencies that will have a direct effect on how staff react to individual service users.

A final issue related to the knowledge of staff is the tacit knowledge they would have regarding the day to day support needs of the service users they work with. The 'theory vs practice' theme highlighted that frontline staff may be excluded from the development of support plans, with frontline managers and clinicians taking a lead role and simply handing guidelines to the staff to implement. While this may only happen occasionally, the fact that it can occur is a major risk to quality support plan development. It also reduces the likelihood of frontline staff buying in to interventions and therefore implementing them with high fidelity. It is important to address this potential gap in information gathering to ensure the most appropriate and fitting interventions are recommended.

#### ***4.2.4 Interventions***

The previous barriers highlight the huge need for ongoing staff support and accountability. There is growing evidence from a number of different disciplines including nursing, teaching, occupational therapy and psychology that reflective practice and supervision can mediate the emotional burden associated with the job (Dawber, 2013). However, for many of those working in the frontline, exposed to the higher levels of challenging behaviour, there



is limited time provided for reflective practice and supervision in comparison to their professionally qualified colleagues. In intellectual disability services, frontline managers tend to have a focus on organisational policy and procedure, ensuring filing systems are up to date, health and safety checks are in order and it would not be unusual to observe a front line manager who remains solely in the office and who does not have time “on the floor” (BILD, 2017). This style of management in front line services, makes successful supervision almost impossible as frontline staff feel disconnected from their manager’s advice as they are not experiencing the day to day running of the house.

Beadle-Brown, Bigby and Bould, (2015) explored how practice leadership can be used to improve staff performance in services for people with intellectual disabilities. Observations, interviews and review of paperwork were conducted in 58 disability services in Australia to determine practice leadership levels. The study found significant relationships between higher levels of practice leadership and active support, suggesting that practice leadership has an impact on staff engagement and interactions with service users. Practice leadership involves the frontline manager providing coaching modelling, organisation and supervision to the team to support them to focus on service user outcomes and educate them on the organisation’s message and philosophy.

A study conducted by Deveau and McGill (2013) found that a practice leadership style had a direct impact on the stress and job satisfaction levels of frontline staff, with stress levels reducing and job satisfaction increasing. Providing staff with ongoing support as outlined by the practice leadership model, will likely be beneficial when approaching the procedural fidelity of support plans. It is clear that the training using an initial verbal and written presentation of guidelines is not effective when it comes to long term support for individuals with complex needs. By increasing the frontline manager’s time “on the floor” and their

understanding of behaviour support, frontline staff will be more motivated and confident in implementing support plans.

To improve procedural fidelity in adult services, a single intervention is unlikely to be effective due to the amount of identified challenges and barriers that are ongoing. A system-wide intervention will be necessary to take into account these identified barriers and contextual factors. The current pilot study aims to address the three main sets of challenges faced by frontline staff. All three areas will need to be addressed simultaneously, so a system-based, contextual approach is required. To ensure as much information about the service users and the environment as possible is gathered, the study will include an initial consultation phase wherein all staff involved in working with the service user will be involved in providing information and developing the behaviour support plan strategies. This element of the intervention will address the reports from the qualitative study that there are hierarchies within the organisations which result in frontline staff often feeling their views are not included. Including frontline staff in the consultation is likely to increase buy-in, and staff knowledge base can also be developed at this stage with the clinician.

Teaching and instruction has been found to have a strong effect size on procedural fidelity levels when used in combination with other interventions such as role-play and modelling (Maginn et al. 2012), feedback and modelling (Vince Garland et al. 2016) and Behaviour Skills Training (BST), which is an intervention package made up of instruction, modelling, role play and feedback (Flynn & Lo, 2015; Pollard et al. 2014; Weinkauff et al. 2011). It has been demonstrated to be successful in teaching a number of different skills to different sets of people, such as teaching parents to implement Pivotal Response Treatment (PRT) (Coolican et al., 2010); or introducing teachers in SEN settings to interventions for self-injurious behaviour (Courtemanche et al., 2014); or training mainstream teachers to implement trial-based functional analysis (TBFA) (Flynn & Lo, 2016). The systematic review reported

in Chapter 2 found that behaviour skills training (BST) produced a strong effect size on the levels of procedural fidelity of behavioural interventions in human services (Brady et al., 2019). This intervention will be useful as residential staff within human services already receive didactic training on behaviour support plans and BST is an extension of an already established practice within the service, so will be more likely to be accepted by the clinicians and frontline staff. The pilot study will include behaviour skills training for all behaviour support plans, to address the challenges identified in the qualitative study of only receiving verbal instruction when being trained in support plans.

The study will also slightly modify the support structure and the monitoring processes already in place in an organisation for adults and children with intellectual disabilities as well as including an element of accountability and positive feedback for staff. Frontline managers will be required to provide coaching, modelling, organisation and supervision, to support frontline staff to focus on a service user's BSP guidelines and quality of life outcomes, and educate staff in the organisation's message and philosophy. It is likely that this will also support communication and team collaboration in relation to PBS plans since challenges to implementation can be identified and resolved quickly due to the frontline manager's focus. The systematic review conducted in Chapter 2 into behaviour interventions used to improve procedural fidelity in human services found that when observation and feedback were used as part of an intervention package, they had a strong impact on intervention effect size. Feedback was also the most commonly employed intervention and was found to be socially acceptable to managers and frontline staff (Brady et al, 2019). Table 11 outlines the different elements of the intervention and the particular challenges identified that they sought to address.

Table 11: Interventions used in pilot study

	Knowledge and skill set of staff	Support structure	Accountability
Consultation	X		X
BST	X		
Practice leadership training	X	X	X
Observation and feedback	X	X	X

In summary, current staff training practices in human services are usually delivered with the purpose of enhancing the staff knowledge of behaviour support, with little or no focus on increasing staff skills or understanding of outcomes for service users (Rose, Rose & Kent, 2012). Due to a lack of ongoing support, the changeable nature of services and staff's own values and understanding of service user's motivations, it is difficult for staff to consistently implement behaviour support plans as written. Practice leadership has been found to improve the quality of staff interactions with service users and effectively train staff in concepts such as quality of life and service user outcomes. The current study combines supervision and practice leadership to address the level of support and feedback that frontline staff receive in their daily jobs. As this research focuses on realigning staff practices and motivations within a larger organisational structure, it was determined that a pilot study should be conducted before carrying out a larger scale project.

The research aims of the pilot study were to explore the feasibility of restructuring organisational practices to increase procedural fidelity levels of BSPs implemented in a residential service for adults with ID and to pilot test the data recording methods and practice leadership guidelines.

The research questions for the pilot study are:

- Does a multi-component organisational approach lead to improved fidelity of implementation of behaviour support plans in residential services for adults with intellectual disabilities?
- Does this approach to improving fidelity levels improve outcomes for individuals with ID and staff?

## **4.3 Methods**

### ***4.3.1 Experimental design***

The overall design of the study was an A-B design, with phased implementation of the intervention over the B phase. Although such a design demonstrates limited experimental control, as this was a pilot study aiming to determine the feasibility of the protocol, this design was deemed appropriate.

### ***4.3.2 Setting***

The study took place in a residential home for individuals with intellectual disabilities in Dublin, Ireland. The home follows a community-based supported living model and follows the principles of the New Directions policy (2012) to guide its practices. All observations took place in the house. No observations were carried out in the community. This choice was made as most behaviours of concern were reported to occur in the house. When out in the community, each service user typically had 1:1 staff support and the behaviours were not considered an issue. Training was also conducted in the house. This was not the ideal setting, however due to time and resource restrictions the organisation was unable to allocate a separate venue for training.

### 4.3.3 *Participants and sampling*<sup>2</sup>

All participants were employees of a large organisation which provides residential and day services to adults and children with intellectual disabilities in Dublin, Ireland (see Setting 4.3.2). Quota sampling was used to select the participating house. The criteria required for the house to be included were:

1. A Person in charge (PIC) assigned to the house: To ensure a frontline manager would be available throughout the intervention;
2. A clinician assigned to the house: To ensure a clinician would be available throughout the intervention for collaboration and training;
3. At least two service users in the house who had positive behaviour support input: to allow for some level of comparison to determine if the intervention was effective;
4. Levels of challenging behaviour displayed by the service users should be considered mild-moderate: This was a condition stipulated by the organisation's ethics committee;
5. At least 90% of the full-time frontline staff should consent to take part in the study: This was also a requirement of the organisation's ethics committee.

The primary participants consisted of all frontline staff ( $n=6$ ) in a residential house for adults with intellectual disabilities, one PIC and one clinical psychologist. During the course of the study, the PIC was reassigned to another location and had to leave the study. A frontline staff member took over her role as PIC and the total number of participants dropped to seven. Table 12 displays the characteristics of the primary participants.

Three service users, two female, one male, consented to take part in the study as secondary participants. For the purposes of this paper, they have been given the pseudonyms John, Sarah and Claire. The service users' ages ranged from 43-54 years old. All service users had a diagnosis of a moderate intellectual disability and one service user had an additional

---

<sup>2</sup> All participant information sheets and consent forms can be found in Appendices I-N

diagnosis of autism spectrum disorder (ASD). The behaviours of concern displayed by the service users included vocal outbursts, throwing objects, physical aggression (hitting and pinching), property destruction and refusal to attend day service. Behaviour support plans for each service user had been in place for an average of 6 years. Two service users were verbal and one service user was non-verbal and communicated using an adapted form of Lámh (i.e., a manual signing system used by children and adults with intellectual disability in Ireland) to communicate. All service users agreed to allow the researcher to read plans and provide staff training based on their support plans.

Table 12: Characteristics of primary participants ( $N = 8$ )

<b>Characteristic</b>	<b>Data</b>
Gender ( $n$ )	
Female	6
Male	2
Age in years ( $M$ , range)	41 (21-52)
Job Title ( $n$ )	
Social care worker	6
Person in Charge	1
Clinical Psychologist	1
Highest qualification ( $n$ )	
BSc	6
PGDip	1
DClinPsyc	1
Experience with Challenging behaviour in years ( $M$ , range)	5.4 (1.5 – 10.5)
Experience in current setting in years ( $M$ , range)	4.05 (0.5 – 6.8)

#### **4.3.4 Measures and measurement**

**4.3.4.1 Observation and data collection.** Observations were conducted by the researcher throughout the process on a weekly basis from baseline until the end of intervention

phase 2. Observations occurred on a Monday at either 7.30am to 9am or 3pm – 4.30pm. There were also three observations that occurred in the evening between 7pm and 9pm. These times were chosen for the observation periods as they were busy times in the house and challenging behaviour was reported to be more likely at these times. All service users were likely to be in the house at these times, so interactions between the staff and all services users could occur. The observations occurred weekly for 17 weeks with a further set of three observations conducted two months post intervention for maintenance checks. The procedural fidelity measure outlined below was completed during each observation.

*Procedural fidelity.* This was the main dependent variable of the study. The researcher developed data sheets based on LaVigna et al.'s (1994) Fidelity Checklist, an example of which can be found in Appendix F. Each checklist was individualised to each service user's support plan and identified the key guidelines and steps of the support plan. Data was recorded using the procedural fidelity checklist for each behaviour support plan. A step was considered complete if any staff member who interacted with the service users during the observation period was seen to implement the step. A step was considered incomplete if any staff member did not implement the step while interacting with the service user, regardless if they had done so previously. For example, one guideline was for staff to "make eye contact with Claire before beginning to use Lámh". If, during the observation period, one staff member made eye contact three times, but did not make eye contact in other interactions, the step was marked incomplete. If a step was not relevant or applicable during the observation stage, it was marked N/A and a percentage was found for all included steps. At the end of each observation session, an average procedural fidelity score across all staff on shift was calculated.

*Observational practice leadership measure (Beadle-Brown, Bigby & Bould, 2015):* The measure has five domains which are all scored out of 5 giving a maximum score of 25.



These domains look at coaching staff and the level of focus on service user lives. The measure has good internal consistency and acceptable inter-rater reliability (Beadle-Brown et al., 2015)

*Incident report forms:* Pre intervention and post intervention incident report forms (which were designed by the organisation and already in everyday use by frontline staff) were used as a proxy measure of pre-intervention and post-intervention outcomes. These intervention forms are completed by frontline staff when a behaviour of concern occurs and are part of the organisation's behaviour support policy. Staff had not received any formal training in collecting data on behaviours of concern.

#### **4.3.4.2 Questionnaires**

All frontline staff received copies of the BPI-01, SESQ and Challenging behaviour self-efficacy scale after they consented to take part in the study. They were asked to complete these and return them to the researcher within two weeks. Following the completion of the maintenance observations, the participants were given the same questionnaires and the Adapted Intervention Rating Profile and asked to complete and return them to the researcher within two weeks.

*Behaviour Problems Inventory (BPI-01; Rojahn, Matson, Lott, Esbensen & Smalls, 2001):* The Behaviour Problems Inventory (BPI-01) (Rojahn, et al., 2001) is a 52-item informant based rating scale used to assess the severity and frequency of problem behaviours in individuals with intellectual disabilities. The inventory is split into three sections covering three different types of problem behaviour. These are; self-injurious behaviours (items 1-15), stereotyped behaviours (items 16-40) and aggressive/destructive behaviours (items 41-52). The BPI-01 was found to have robust reliability and validity as a behaviour rating tool for adults with intellectual disabilities (Rojahn et al., 2001).

*Front line staff satisfaction questionnaire (SESQ; Beadle-Brown et al., 2003):* The SESQ (Beadle-Brown et al., 2003) parts A and B were distributed to all frontline staff. Part A

consists of 19 questions. These questions are concerned with age, gender, ethnicity, disability, length of time working with people with learning disabilities, previous work experience, length of time working in current position, length of shift and number of days absent in past 12 months. The questionnaire also addresses previous training and the client base that they support. Section B focuses on job satisfaction and management style. Two rating scales are utilised for this. The first is the Dyer scale, which is a measure of job satisfaction. The Dyer scale comprises of 24-items rated on a Likert scale ranging from 'very dissatisfied' = 1 to 'very satisfied' = 5. The second scale employed was the Freeman scale, which is a measure of quality of management. The Freeman scale comprises of a 17-item questionnaire scored on a Likert scale. Items 1-12 and 16-17 are on a five point scale ranging from 'always' = 1 to 'Never' = 5. Item 12 is rated on a 5 point scale ranging from 'very easily' = 1 to 'not easily at all' = 5. Finally, Items 14 and 15 are rated on a four point scale ranging from 'completely' = 1 to 'not at all' = 4.

*Staff self-efficacy scale (Hastings & Brown, 2002):* The measure used a scale of four self-efficacy items: (1) feelings of confidence, (2) satisfaction in dealing with behaviours, (3) a perception that they have a positive impact on behaviour and (4) a rating of how difficult they find it to work with challenging behaviour. Each item was rated on a 7-point scale. The ratings were added to form a total self-efficacy score.

*Intervention rating profile (IRP-15; Martens, Witt, Elliott & Darveaux, 1985):* The IRP-15 is a 15-item questionnaire designed to assess the acceptability of an intervention or treatment. The intervention was adapted by the researcher so the questions would relate to the residential setting. For example, item 1 'This was an acceptable intervention for the *child's problem behaviour*' was adapted by changing it to 'This was an acceptable intervention for the *staff's behaviour change*.' The complete list of adaptations can be found in Appendix G. It was

used in this study to assess the social validity of the staff intervention and to explore whether staff found it an acceptable intervention to improve procedural fidelity.

**4.3.4.3 BSP Quality rating:** All behaviour support plans involved in the research were rated for quality by an experienced third party who was blind to the purposes of the study. The BSP-QEII was used. Quality ratings were carried out on both the original and adapted behaviour support plan at the same time. The person rating was not informed which was the pre-intervention or post intervention support plan.

*Behaviour Support Plan Quality Evaluation Tool (BSP-QEII; Wright, Mayer & Saren, 2013):* The BSP-QEII is a measure of the quality of a BSP. The evaluation tool consists of 12 domains which identify if specific clinical and implementation elements of the BSP are present. There are 9 clinical domains and 3 implementation domains to be assessed. The BSP-QEII was found to have good inter-rater reliability and good utility for assessment of BSPs for adults with ID in community support services (McVilly, Webber, Paris & Sharp, 2013).

#### **4.3.5 Ethics**

Ethical approval was received from the Tizard Centre research ethics committee in addition to the organisational ethics committee (See Appendix H). All participants received an information sheet and consent form (Appendices I-N) at the outset of the study. The researcher also provided participants the opportunity to ask further questions. As the organisation was adopting changes to their practice, all staff were expected to take part in these changes for their role as part of their typical duties. However, they were given the choice whether or not to take part in the study. In other words, if staff chose not to participate in the study, they were still required by their organisation to take part in training provided by the clinician, practice leadership provided by the manager, etc., since these would become part of the typical practices within the organisation. It was made clear that if staff did not consent to participate in the study, they would not be observed by the researcher and data would not be

collected on their implementation of the behaviour support plan and they would not be required to complete questionnaires. To protect front-line staff from feeling pressured to participate, it was the researcher rather than the manager who invited them to participate. It was made clear that their participation was entirely voluntary and that there would be no adverse consequences if they chose not to participate. When consent was obtained from all staff in the house, each service user's key worker obtained consent from the service users using an accessible consent form (Appendices O-P). After consent was obtained from each staff member and service user, the researcher arranged a suitable time to meet with staff.

#### **4.3.6 Procedure**

**4.3.6.1 Consultation procedure:** Behaviour consultation is defined as “A multi-step problem solving process that provides indirect service provision to a client” (Palmer, Pahn & Carlson, 2011, p.229). The researcher used the consultation process to develop strong relationships with all participants and increase the likelihood of buy in to the support plan by giving them a direct input to the interventions and guidelines included in the plan.

During this phase, the researcher met separately with the clinician, frontline manager and each key worker to discuss the existing behaviour support plans. All participants were given the opportunity to discuss current interventions and elements they felt were successful, unsuccessful and difficult to carry out. The researcher used the Functional Behaviour Assessment Interview (FBAI) (O' Neill et al., 1997) to guide the consultation process. This questionnaire can be used to interview staff, parents and teachers about the individual and the behaviours of concern they display. It typically takes between 45-90 minutes to administer and is used to gain a clear description of the behaviour of concern, the antecedent or environmental factors which may trigger behaviour, a possible function of behaviour and a behaviour hypothesis. The FBAI can also be used to gather information about the individual, their likes and interests which can be used to develop interventions. Confidentiality was agreed for each

meeting to give all participants the opportunity to discuss the current behaviour support plan in detail and have their say on what was effective and what was not effective. All feedback and suggestions were recorded by the researcher in a notebook, to be used later when reviewing the BSPs.

Following the initial consultations, the researcher used the Behaviour Support Plan Quality Evaluation Tool -II (BSP – QEII) to score the quality rating of each behaviour support plan (this was to guide the consultation process and was independent of the quality ratings completed by the independent rater before and after the intervention). Using this scoring system, the researcher made note of both clinical and implementation elements of the behaviour support plan which were missing or that warranted more detail. Finally, the researcher had a second consultation with the clinician and presented the feedback and quality rating information. The researcher and clinician collaborated to modify and update the behaviour support plans to include the frontline staff input and to ensure they included the information required for a high-quality rating score. The intervention focus was to support the clinician to develop a BSP that was consistent with BSP-QEII standards. Providing further detail on the modifications to the BSPs was beyond the scope of the thesis and the researcher did not receive consent to share any details of individual support plans.

**4.3.6.2 Baseline:** During baseline, observational data were recorded for each staff participant's fidelity of implementation as described in section 4.3.4. Baseline observations occurred weekly over a period of 4 weeks.

**4.3.6.3: Intervention phase 1:** The researcher and clinician co-developed a behavioural skills training plan for training frontline staff to accurately deliver the BSP. Feedback was then obtained from the frontline manager on this training plan. The training slot allocated by the organisation for this project was 3 hours. Each behaviour support plan was allocated one hour of time to include teaching, modelling, role play and feedback. Training

was delivered in the residential house kitchen and delivered primarily by the frontline manager with support from the clinician.

While the training was being developed, the researcher met with the frontline manager to work on practice leadership skills. This was done in quite an informal manner, with discussion of current practices and how to improve these, engaging in observation sessions and role-plays and feedback scenarios. The manager was provided with supervision and feedback guidelines which were to begin following completion of the behaviour skills training.

Following the BST, the feedback given by the frontline staff during the training was used to make final modifications to the support plans. Once this was complete, the support plans, along with all necessary materials (e.g., visual supports, timers, etc.) were given to the frontline staff and manager.

During the study it was necessary to shape the behaviour of the participants slightly and modify the intervention targets. This was due to extraneous variables which had an impact on participants' ability to implement the plan. Shaping is defined as teaching a behaviour or skills by differentially reinforcing successive approximations of the target behaviour (Cooper et al., 2014). As outside governing bodies and organisational restrictions were making implementation of the plan difficult, goals were modified to be more achievable.

Following the BST, PIC 1's job role was expanded and she was given the additional responsibility of another house with seven residents and ten staff. Due to the nature of her new responsibilities, she was unable to be in the study house for more than one morning a week and could not carry out observations related to the study. Staff began to implement the support plans; however, it was noticed that visual supports and the skill teaching elements of the plans were not being implemented consistently. During discussion with participants, it was highlighted that HIQA inspections were a major cause of concern and priority when it came to work load. The researcher incorporated task analyses for skill development which were in line

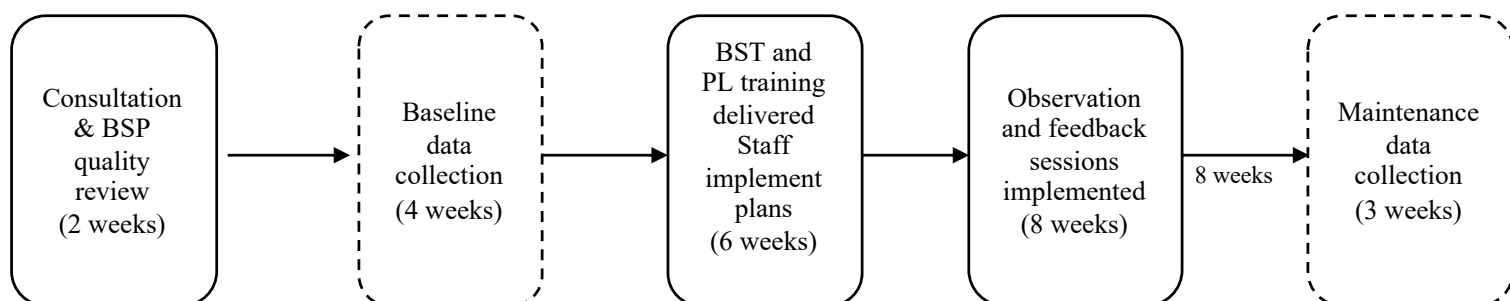
with HIQA tasks such as hazard awareness and cleaning different areas in the home. Staff found these to be more acceptable skills for the service users to begin working on than the originally suggested tasks of folding laundry, making a cup of tea and making a meal. These tasks were used as a means of building up some behavioural momentum towards the staff target behaviours. Additional visuals were also provided to frontline staff to reduce the work load required to implement the plans successfully.

PIC 1 was unable to carry out any observation and feedback sessions with any staff members. After 6 weeks, she was replaced by one of the frontline staff who was promoted to Person in Charge (PIC 2). The researcher spent 3 hours with PIC 2, discussing practice leadership skills and engaging in role plays of observation and feedback sessions with the researcher. Once she achieved competency criteria in these areas, she was advised to begin observation and supervision sessions with the staff. Feedback and observation sessions had not started after 3 weeks. The researcher supported the frontline manager to make a list of staff and decide who she would be most comfortable to begin the supervision process with. When the manager completed this supervision session, she moved to the next person on the list.

**4.3.6.4 Intervention phase 2:** As an addition to phase 1, additional feedback and observation was introduced. The PIC 2 took 10 minutes, twice a week to observe each frontline staff member in their day to day working, using the fidelity checklists as a guideline. Following this, she provided immediate feedback. At the end of each month a more formal feedback session with the PIC frontline staff member was provided which lasted between 15- 20 minutes each. During this feedback session the frontline staff had the opportunity to give input to the support plan which would be relayed to the clinician or service manager.

**4.3.6.5. Maintenance:** Eight weeks after the intervention was completed, the researcher returned to the house to conduct maintenance observations over a period of three weeks. The researcher had not been involved with the service users or staff in any way during the eight-

week period. These observation sessions used the same fidelity measures as described in section 4.3.4. Figure 3 displays the intervention timeline.



*Figure 3: Timeline of pilot study intervention process*

#### **4.3.7: Reflexivity**

Reflexivity is described as “analytic attention to the researcher’s role in qualitative research” (Gouldner, 1971, p.16) and is an acknowledgement that the researcher is part of the social world they study (Ackerly & True, 2010). Palaganas, Sanchez, Molintas and Caricativo, (2017) suggest that it is the duty of every researcher to be committed to reveal and share all their reflexivity’s for further learning and theory building.

The researcher acknowledges that some of their own personal preconceptions of residential houses may have affected the consultation process and development of training. The researcher has worked in organisations similar to those the participants were employed in as a frontline staff member, frontline residential manager and behaviour specialist and was aware that personal experiences could produce leading questions or a focus on similar experiences during the consultation. To avoid this, the researcher used the FBAI guided interview to structure the consultation process. The researcher was clear about her role as a collaborator with the clinician to ensure that the clinician’s view and input was included.



The researcher also acknowledges that the impact of the house manager having her responsibilities change was personally frustrating. To ensure that none of the researcher's own frustrations were conveyed to the participants, the researcher sought additional supervision and support to manage the changes and guide the study back on course. The author also maintained a reflective journal throughout the study to support discussion in supervision and to highlight any ongoing issues or challenges in the study process.

#### **4.4 Results**

##### ***Is it feasible to conduct an organisational approach to improving fidelity?***

The primary aim of this pilot study was to assess the feasibility of restructuring organisational practices to increase procedural fidelity levels of BSPs implemented in a residential service for adults with ID. Using information from the researcher's reflective journal, some observations can be made. Two key barriers were identified to implementing the intervention during the course of the study. Both barriers were related to larger organisational influences on the day to day running of the residential services. The first barrier occurred following the BST element of the intervention. The PIC's job role was expanded to managing two residential homes. Due to the increased work-load the PIC was unable to be in the study house enough to carry out the practice leadership element of the intervention. This delayed the study for 6 weeks while the organisation recruited a replacement PIC from within the current staff team.

The second barrier was staff's prioritisation of HIQA paperwork over accurately implementing elements of the plan. Examples of this are; services users who required supervision in communal areas left unsupervised while staff completed safety checks; a service user's augmentative communication system not being developed until the individual's Person Centred Plan folder was updated (As this individual had no communication system in place,

staff chose the goals for the individual) and an individual's FIRST/THEN protocol not being followed as staff had to clean the bathrooms. It was also noted by the researcher that overall, staff engaged in the process and found the interventions to be acceptable and have a positive impact on their working day. This would suggest that the organisational intervention and data collection procedures are feasible.

### ***Does an organisational approach lead to improved fidelity?***

Figure 4 shows the procedural fidelity levels of implementation of the support plans for all three service users. Data points correspond to the average levels of procedural fidelity across all staff present during the observation. All staff were observed implementing the support plan without any additional training or feedback in the baseline stage. Average levels of procedural fidelity of John's behaviour support plan during the baseline stage were 69% (Range = 50%-86%). Procedural fidelity levels were extremely variable during this phase. During the first phase of the intervention, there was an increasing trend in levels of implementation fidelity with data points noted as quite variable ( $M = 75.8\%$ , Range = 60%-89%). The introduction of observation sessions in phase 2 of the intervention saw more stable levels of procedural fidelity ( $M = 91.25\%$ , Range = 85%-100%). Maintenance data was recorded after 8 weeks and average levels of procedural fidelity were found to be 90% for John's plan with a stable trend.

At baseline recording, procedural fidelity of implementation of Sarah's plan was 44% (Range = 53%-60%). Following behaviour skills training and modification of the plan in phase 1 of the intervention, the average levels of procedural fidelity of implementation were observed to be at a higher level with an increasing trend ( $M = 62.2\%$ , Range = 55%-72%). After the introduction of observation and feedback sessions in phase 2 of the intervention, the levels of procedural fidelity were higher again with a stable trend for Sarah's plan ( $M = 80.25\%$ , Range

= 72% - 86%). In the maintenance observations, the average score of fidelity of intervention was 85% with a stable trend.

Claire's plan was observed to be implemented with a procedural fidelity average of 28.75% (Range = 15%-31%) at baseline with an increasing trend. Following behaviour skills training and modification of plans in phase 1 of the intervention, the levels of procedural fidelity were observed to be higher with a more variable set of data points and an increasing trend ( $M= 46.7%$ , Range = 25%- 60%). After the introduction of observation and feedback sessions with the frontline manager in phase 2 of the intervention, the level of fidelity across observation sessions were at a higher level, with stable data points ( $M = 79.8%$ , Range = 72% - 86%). During maintenance observations, average procedural fidelity was 40%.

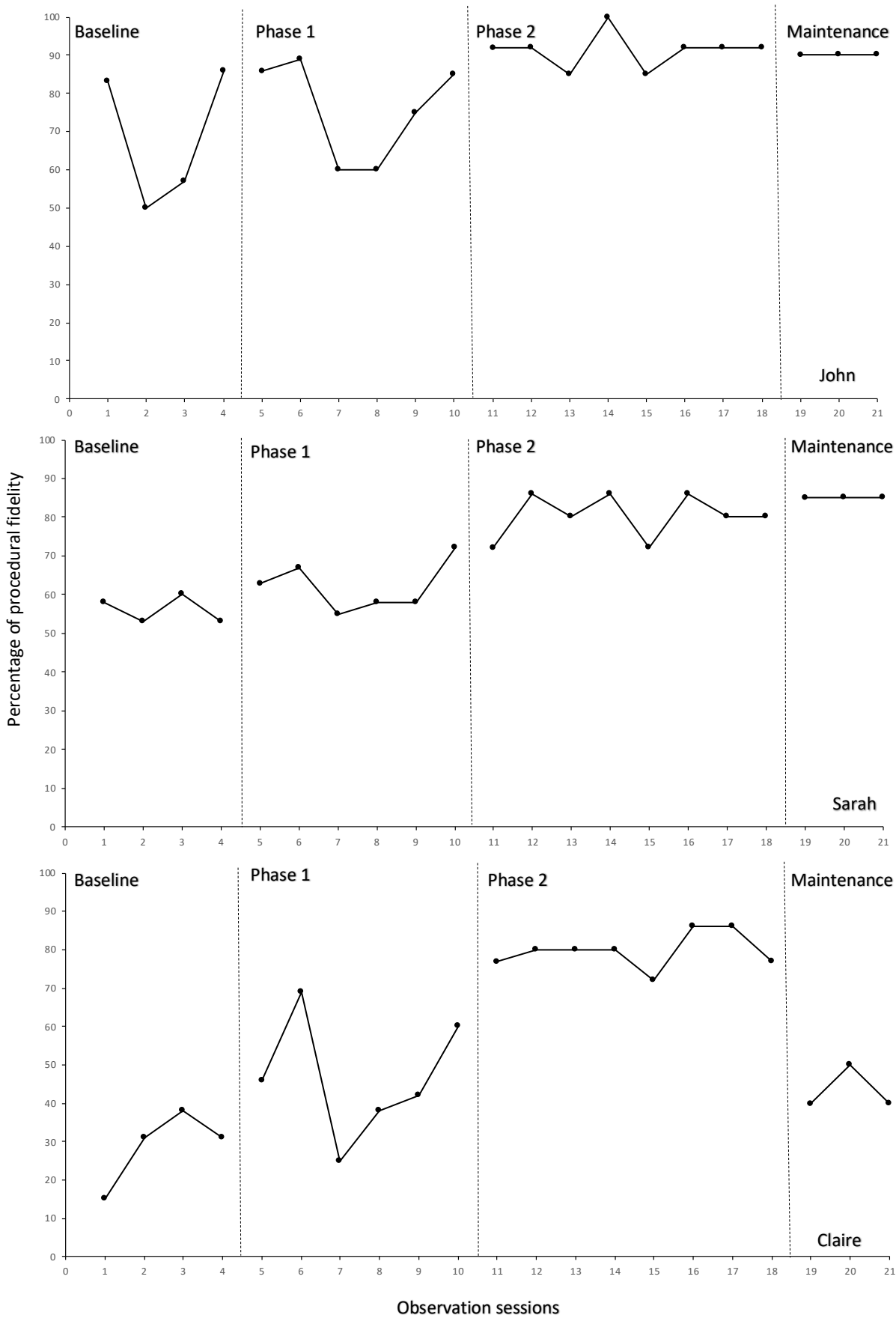


Figure 4. Average scores of procedural fidelity of behaviour support plan for John, Sarah and Claire

*Does an organisational approach to improving fidelity levels impact outcomes for individuals with ID and staff?*

Data on the number of occurrences of challenging behaviour for John and Sarah were gathered by frontline staff throughout the study using the organisation's incident report forms. No reliable data was collected by frontline staff for Claire's behaviours of concern. Figure 5 displays the levels of occurrences of challenging behaviour for John and Sarah during each stage. Each data point represents the number of occurrences of behaviour per month. This data should be treated with some caution as it was collected by the frontline staff who did not receive any formal training in data collection.

During the baseline stage, John was engaging in challenging behaviour an average of 6.3 times per month. The number of occurrence dropped immediately following staff behaviour skills training and modification of plans in phase 1 to one occurrence, but an increasing trend in data points was observed during this time. The levels dropped again following the introduction of observation and feedback in phase 2 of the intervention. The data gathered during the maintenance stage display an increase in levels of challenging behaviour. Despite this, John's levels of challenging behaviour remained below baseline levels during the maintenance stage with an average of 3 occurrences per month.

During the baseline stage, Sarah was engaging in challenging behaviour an average of 10.3 times per month. Following staff behaviour skills training and modification of plans in phase 1 of the intervention, the levels of challenging behaviour immediately dropped to an average of 3.6 times per month. After observation and feedback supervision sessions were introduced in phase 2 of the intervention, the levels of challenging behaviour were 4.5 times per month. In the maintenance stage, Sarah's levels of challenging behaviour were at an average of 2 times per month.

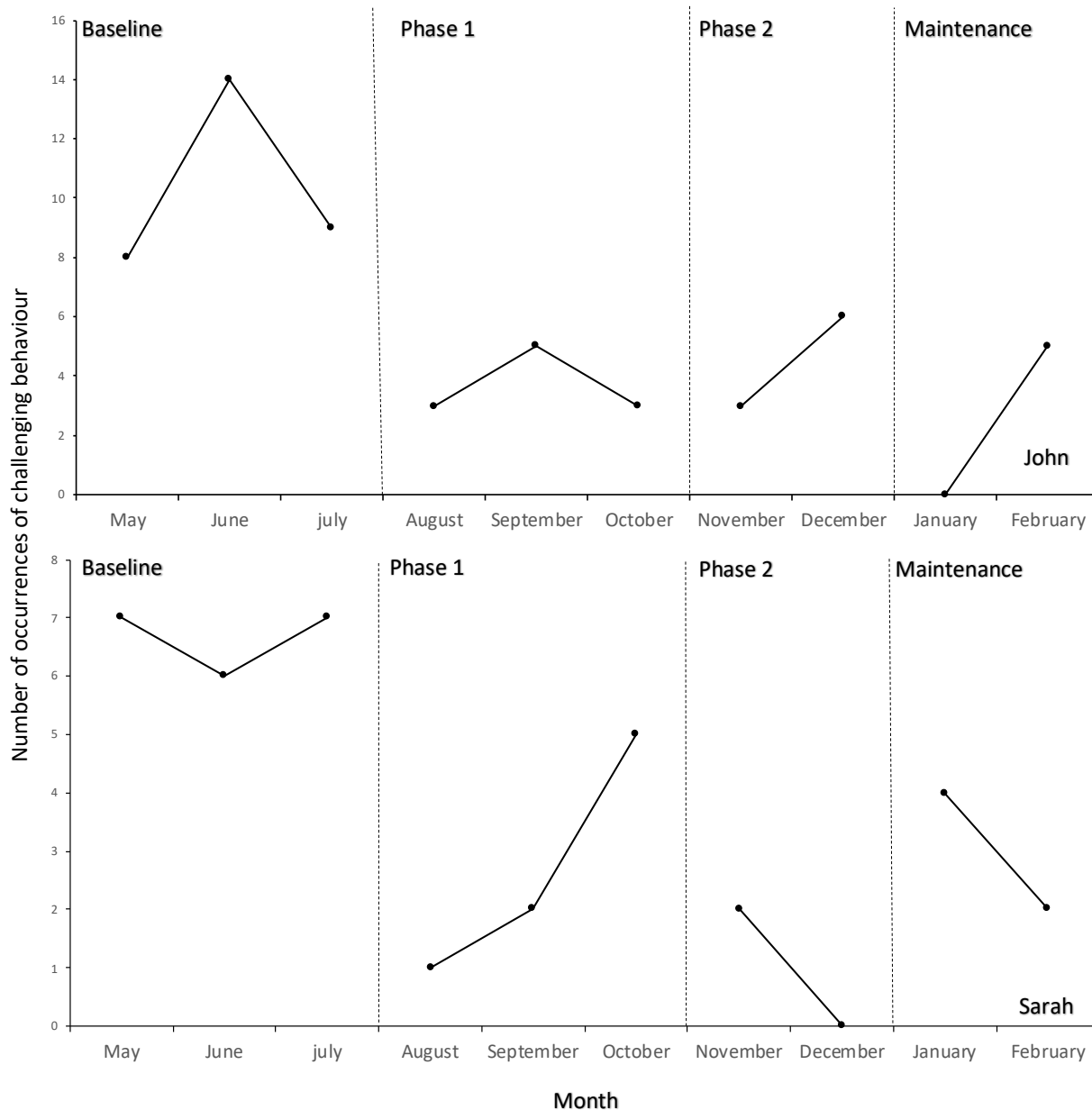


Figure 5: Occurrences of challenging behaviour each month for John and Sarah

**Observational practice leadership measure:** As seen in Table 13 the overall score increased from 13 to 21 (out of a possible 25) from pre- to post-intervention. The biggest improvement was seen in the coaching staff to deliver better support domain with an increase in score from 2 to 5.

Table 13: Observational practice leadership scores pre-intervention and post-intervention

Item	Pre-intervention	Post-intervention
Allocating and organising staff to deliver support	4	4
Coaching staff to deliver better support	2	5
Reviewing the quality of support	3	5
Reviewing how well the team is enabling people	2	4
Focus of manager's work is on the quality of life of service users	2	3
Overall score	13	21

**Behaviour problem inventory measure:** All ratings of John's frequency and severity of problem behaviours reduced post-intervention. The largest reductions were seen in the frequency and severity of aggressive behaviour which is what was targeted in his behaviour support plan. There was a large decrease in the ratings of the severity and intensity of Claire's aggressive behaviour post-intervention. The main focus of Claire's behaviour support plan was her aggressive behaviours. There was no change in ratings of frequency and severity of SIB for Claire and a small decrease in the frequency of stereotypy in the staff ratings. There was an increase in the rating levels of Sarah's stereotypical behaviour which is what was targeted in her behaviour support plan. There were small decreases in the rating levels of Sarah's SIB and aggression. Frequency and severity scores are reported in Table 14.

Table 14: BPI-01 scores pre intervention and post intervention

		Frequency		Severity	
		Pre-intervention	Post-intervention	Pre-intervention	Post-intervention
John	SIB	4	2	3	2
	Stereotypy	22	17	20	12
	<b>Aggression</b>	<b>15</b>	<b>6</b>	<b>16</b>	<b>9</b>
Claire	SIB	1	1	1	1
	Stereotypy	7	6	3	3
	<b>Aggression</b>	<b>12</b>	<b>4</b>	<b>12</b>	<b>4</b>
Sarah	SIB	12	10	8	7
	<b>Stereotypy</b>	<b>12</b>	<b>13</b>	<b>7</b>	<b>9</b>
	Aggression	6	4	4	2

*Note: Behavioural areas highlighted in bold display the area that was the focus of the BSP for each participant*

**Staff experiences and satisfaction questionnaire (SESQ): Part A: Training and aims of service.** The most recent training delivered to staff was person centred approaches delivered to all staff within the last 6 months. All other training had been delivered over 2 years ago to four participants. Two participants had never received training in Autism or communication during their time within the organisation.

Pre-intervention three participants described the aims of the service in terms of providing care for service users: “caring for people with disabilities”; “keeping the residents safe”; “making sure people have everything they need.” Three participants described the aims in terms of quality of life goals: “supporting people to reach their full potential;” “providing an environment that allows people to succeed and progress;” “supporting people to live meaningful and fulfilling lives with access to the community and their families.” Post-intervention all participants included quality of life goals in their description of service aims.

*Part B: Job satisfaction (Dyer scale) and Management style (Freeman scale).* Staff ratings of job satisfaction increased post intervention from a mean score of 2.76 to 3.8. Management style ratings decreased from a mean score of 53.3 to 42.1 (Lower scores on this scale are indicative of a more positive view of managers. See Table 15 for ratings.

Table 15: Job satisfaction and management style (Freeman scale) ratings ( $n = 6$ )

	Pre-intervention Mean (range)	Post-intervention Mean (range)
Overall job satisfaction	2.76 (2.26 – 3.5)	3.8 (2.7-4.2)
Score on management scale	53.3 (41 – 60)	42.1 (32 – 54)

**Staff self-efficacy scale:** Staff self-efficacy scores increased slightly from a mean score of 18.5 (Range – 12.0-20) pre-intervention to a mean score of 20.5 (Range = 14.5 – 22.0) across the staff team.



**Social Validity (IRP-15):** The participants' ratings of the intervention were positive. The mean rating across all questions and participants was 5.5 (range 4.5-6.0) out of a possible 6.0. Across all participants, staff strongly agreed that the intervention was an acceptable intervention to increase procedural fidelity ( $M=5.6$ , Range = 4.0-6.0). The staff also agreed that the intervention would be appropriate for a variety of staff, support plans and settings ( $M=5.5$ , Range = 4.0-6.0). The mean overall score across all participants was 84.0 (Range 67.7-90) out of a possible 90.0.

**Behaviour plan quality rating (BIPQ-II):** All plans scored by the independent, blind rater were scored in the underdeveloped category pre-intervention. Elements missing from all the plans were *predictors relating to function, function related to replacement behaviour and team coordination*. Following consultation and re-development of the plans, the scores increased with Claire and Sarah's plan rated as a *good plan* and John's rated as a *superior plan*. See Table 16 for a breakdown of scores.

Table 16: Behaviour support plan ratings based on BIP-QE II scoring guide pre-consultation phase and post-consultation phase

	John Pre-C	Post-C	Claire Pre-C	Post-C	Sarah Pre-C	Post-C
Problem behaviour	2	2	1	2	1	2
Predictors of behaviour	2	2	0	2	0	2
Analysing what is support problem behaviour	1	2	0	2	0	2
Environmental changes	1	2	1	2	1	2
Predictors related to function	0	2	0	2	0	2
Function related to replacement behaviours	0	2	0	2	0	2
Teaching strategies	1	2	1	2	0	2
Reinforcement	0	2	2	1	0	1
Reactive strategies	2	2	2	2	2	2
Goals and objectives	1	2	1	1	0	1
Team coordination	0	1	0	1	0	1
Communication	0	1	0	1	1	1
<b>Total score</b>	<b>10</b>	<b>22</b>	<b>8</b>	<b>20</b>	<b>5</b>	<b>20</b>
<b>Rating*</b>	<b>UP</b>	<b>SP</b>	<b>UP</b>	<b>GP</b>	<b>UP</b>	<b>GP</b>

\*UP = *Underdeveloped Plan*; GP = *Good Plan*; SP = *Superior Plan*

**Inter observer agreement (IOA):** A second observer took part in four observations with the researcher and the manager and researcher took data on the same observations three times to provide interobserver agreement. IOA was measured for 28.6% of all the sessions by a trained observer for procedural fidelity scores. No IOA data was collected for the observations of service user behaviour outcomes as these behaviours all occurred at very low frequencies and so were recorded by the staff. The second observer was a trained behaviour analyst who received separate training in all support plans in place. Total count data was used to calculate IOA between the researcher and the trained observer. The number of agreements were divided by the number of agreements plus disagreements and multiplied by 100 to produce a total IOA percentage for that session. The mean agreement between the two observers across all sessions was 91.3% (Range: 83.3%-96.4%).

## **4.5 Discussion**

This study aimed to increase levels of procedural fidelity of implementation of behaviour support plans in residential services for adults with intellectual disabilities. Previous research has tended to focus on improving procedural fidelity levels in more structured, and therefore arguably more easily managed environments such as schools and clinics, with little exploration of how to maintain high levels of procedural fidelity in more variable settings such as residential homes. Previous research also focused on single interventions or small treatment packages rather than support strategies that might be required throughout a person's day (Brady et al., 2019). The study also aimed to assess the feasibility of the data recording methods and the protocol of the study. A number of barriers were noted in this area which will be discussed later.

### ***4.5.1 Feasibility of protocol***

A challenge the researcher met was the conflicting set of responsibilities that frontline staff had. Staff are obliged by company and government policy to ensure certain pieces of paperwork and household duties are completed every day as well as obliged to interact and support service users in a meaningful and positive way throughout their shift. The behaviour support plans provided guidelines as to how to interact appropriately and gave examples of activities and tasks that would be meaningful for each service user to engage in through life skills training. The service users also each have their own Person Centred Plans (PCP) which have goals and targets that the service user is working towards. However, the researcher noted that the company and government policy tasks were given much greater priority than the tasks and activities outlined in the behaviour support plans, with service users often sitting alone watching television or eating in the kitchen without supervision while staff completed administrative or cleaning tasks.

Staff acknowledged that this was happening and explained it as an unfortunate side effect of ensuring the service users live in a safe and clean environment. A major contributing factor to the staff priorities is the fact that punitive consequences are in place for any instances when health and safety and administrative tasks are not kept up to date. HIQA carry out regular inspections of homes, both announced and unannounced and have the power to close down residential services if they do not meet quality standards. While the researcher would not advocate punitive consequences as a motivational tool for implementing support plans with high fidelity, a level of accountability, monitoring and feedback on the implementation of behaviour support will motivate staff to engage with service users and prioritise these positive interactions more. The frontline manager could also provide more support to frontline staff to plan shifts with service user outcomes in mind. This will involve designating essential administrative tasks and setting aside time for staff to complete these as well as supporting staff to see what areas service users can contribute to when it comes to HIQA responsibilities. Examples of meaningful tasks service users can engage in, to compliment staff duties are cleaning, fire checks, cooking and shredding. All these tasks can be modified and supported by staff to ensure they are carried out safely, but will also provide the service users with meaningful engagement and the ability to learn new tasks and skills. This will be an essential aspect of future research to promote staff working in partnership with service users and promoting independence and self-determinism, rather than doing things “for” others.

#### ***4.5.2 Impact on procedural fidelity and client outcomes***

Levels of procedural fidelity of implementation of all behaviour support plans were found to increase following intervention. The behaviour skills training had an impact on the implementation on two of the three service user support plans. This finding is reflective of previous research (Coolican et al., 2010) which observed similar effects when BST was used to train parents of children with ASD in how to implement behaviour support plans. There was

a larger increase in procedural fidelity across all support plans following the implementation of the practice leadership methods combined with the observation and feedback sessions. Again, this is reflective of previous procedural fidelity literature which found that observation and feedback are effective in increasing accuracy of implementation (Brady et al., 2019). These findings would suggest that BST can only provide so much behaviour change, if not supported by ongoing good practice leadership, through observation and feedback.

A secondary outcome of the study was the levels of challenging behaviour displayed by the service users. While only two sets of data were collected, both displayed a drop in challenging behaviour following the behaviour skills training and challenging behaviour levels remained lower than baseline in the maintenance stage. These findings are similar to Vollmer et al (2009) who reported that increased levels of procedural fidelity have a direct impact on client outcomes, specifically in relation to reducing challenging behaviour. BPI scores also reflect these findings. For John and Claire, the BPI area that changed most was aggression. This would be expected as this was the focus of the BSP. Interestingly, although not a direct focus of the BSP, small decreases were also observed in stereotypy and SIB. Sarah's support plan was aimed to directly intervene with stereotypical behaviours including vocalisations. There was an increase in scores on the BPI-01 for Sarah's frequency of stereotypy and its severity. At maintenance stage, the procedural fidelity levels for implementation of Sarah's plan had returned to baseline levels. These findings indicate that when staff behaviour is not consistent it may in fact strengthen an individual's behaviours of concern. It is however, important to note that the reliability on proxy measures creates a difficulty in determining the true extent of behaviour change. In future research it would be useful to incorporate observational measures of client outcomes to be able to produce more reliable findings.

#### ***4.5.3 Quality of behaviour support plans***

Quality ratings of existing behaviour support plans were low, with several key clinical and implementation elements missing. These findings are similar to those of Wardale, Davis, Vassos & Nankervis (2018) who conducted a statewide audit of the quality of positive behaviour support plans in Australia. A review of 139 BSPs using the BSP-QE 11, found an average rating across all plans as ‘weak’. It is of note that these behaviour support plans had recently been rated by HIQA and approved, suggesting that the best practice guidelines for positive behaviour support plans in Ireland as set out by HIQA do not meet the criteria of evidence-based quality guidelines. There was an increase in procedural fidelity levels following the re-development of the support plans, however as this element of the intervention was introduced at the same time as BST it is not possible to determine the effect this had on the staff’s implementation of the plan. It should also be noted that none of the re-worked plans met the criteria for *team coordination* and *communication*. As will be discussed later, a limitation of this study was the team coordination and challenges with communication, so further research would benefit from placing an emphasis on these areas in the support plans.

#### ***4.5.4 Impact of practice leadership levels***

The practice leadership measure was conducted with two different frontline managers pre- and post-intervention due to outside influences on the study. This was deemed to be acceptable as the measure reviews a set of observable behaviours, rather than taking into account personality type or relationships, however it is clearly not without limitations. The intervention had a significant impact on the scoring of the observational practice leadership measure with scores increasing from 13 to 21. This is not surprising as the intervention was designed to work specifically on two domain areas: coaching staff and reviewing quality of support. While it is not possible to be certain that the intervention led to the changes in practice leadership levels, as there were two different PICS pre-intervention and post-intervention, it is

important to note that there is a direct correlation between improved practice leadership scores and increased levels of procedural fidelity suggesting there is a relationship between the two. This is in line with Beadle-Brown et al. (2015), who found an increase in active support when there were higher levels of practice leadership. Many elements of the PBS plans involved active support principles such as increased positive engagement, consistency and choice. The results suggest that ongoing support and feedback increase frontline staff's ability and motivation to carry out these elements of plans.

#### ***4.5.5 Extraneous variables***

During the study, a number of things occurred which could not be accounted for in the direct data collection. These outside elements were identified in the author's reflective journal and were a result of the organisational culture and the influence of the larger governing bodies on the day to day running of the house. One variable which had an impact on the house was the absence of the PIC. There was an almost immediate increase in staff sickness and applications for annual leave following the PIC's redeployment to another location. Frontline staff were unsure of what was happening and the lack of leadership had an instant impact on morale and motivation. This was not unexpected as previous research has shown that staff that have open, supportive relationships with their supervisors score significantly lower on measures of burnout, with less sickness and absenteeism (Gibson, Grey & Hastings, 2009).

Organisational culture (Dyer & Quine, 1998) and team climate (Rose & Schelewa-Davis, 1997) have been identified as potential sources of stress. It is likely that the team climate was disturbed by the PIC's absence as staff had to work longer shifts to cover others and there were more agency staff on shifts to make up for absent team members. Poor staff morale has been shown to impact on job performance in those who work in human service environments (Jenkins & Allen, 1998). It is likely that if staff job performance is lower than normal, levels of procedural fidelity will also be impacted. Another challenge identified in the pilot study was

the training which staff received in relation to challenging behaviour. The SESQ identified that staff had not received any formal training in challenging behaviour in the previous two years, despite it being part of company policy to have updated training annually. Another element of company policy which was not adhered to strictly, was the requirement for staff to complete a level five FETAC qualification in PBS within a year of starting with the company. Only 50% of the participants had completed this training. This organisational culture and attitude towards the importance of quality PBS training may have an impact on staff's motivation and attitude to engage in trainings and guidelines as they may not see the need to prioritise these skills.

When moving forward with this area of research it will be essential to address these organisational challenges by including senior management in the discussions and highlighting the very direct and immediate impact that high level decisions make on frontline staff and service user outcomes. While the procedural fidelity levels did increase slightly following Behaviour skills training, the larger change was observed when observation and feedback was introduced. This highlights that ongoing support and on the job training is an effective component for behaviour support plans to be implemented with high fidelity.

#### ***4.5.6 Limitations of study***

The current study was limited in a number of ways. Two clear limitations were the small number of participants and the lack of experimental control granted to the researcher. These limitations were due to the fact this was an initial pilot study to determine feasibility of the interventions. Another limitation attributed to organisational constraints and a small number of hours that could be dedicated to staff training, the behaviour skills training was very brief for each service user, with only one hour dedicated to each. This meant that competency criteria could not be assessed for each member of staff before they began implementing the plan. The training also took place in the residential house kitchen, which was extremely cramped and made modelling and role-play difficult to carry out. Staff were engaged



throughout the process, but more space and time would certainly be beneficial moving forward. The study was also delayed by the change of frontline manager in the middle of the process. This will have had an impact on the outcomes for staff and service users as other variables may have had an effect on the process such as manager personality and previous relationships with staff. Moving forward, the researcher does not feel it would be realistic to attempt to ensure all staff remain in the setting for the duration of the process, due to the changeable nature of frontline staffing. The researcher proposes that any future research in this area, has a contingency plan for when staff leave the service or become unwell. This would involve having a designated 'deputy' who would also take part in the practice leadership training and be able to step into the frontline manager role if necessary. Finally, the data collection, which focused on the procedural fidelity of the plans and levels of challenging behaviour, did not capture other aspects of the day to day life of the service users. More positive aspects of the plan such as meaningful interactions with peers and staff were not recorded. The support plans and fidelity checklists were limited to scripted phrases and tasks and interactions which should occur. No scope was provided to capture some of the more spontaneous and meaningful interactions which may occur each day as staff become more successful in their understanding of the pbs guidelines. These would be very beneficial to get a clearer picture of the impact increases in procedural fidelity have on the quality of life of the individuals who are receiving support and the level of interaction they have with staff and others.

In summary, the pilot study demonstrated that procedural fidelity levels of implementation of support plans can be increased using consultation, behaviour skills training, quality plans, and observation and feedback. The intervention was considered an acceptable intervention by staff and management and allows staff to learn new skills and generalise them throughout their working life. Future research will need to address the impact that the larger organisation and regulatory bodies have on the delivery of support plans and provide supports

and training for staff to understand how their different responsibilities can be carried out without reducing the time spent engaging with and teaching the people they support

## **Chapter 5. Improving procedural fidelity of implementation of support plans in multiple settings**

### **5.1 Chapter overview**

This chapter begins by reviewing the challenges identified in the pilot study and proposing alternative and additional interventions, in order to make a more robust set of supports to deliver behaviour support plans with high fidelity. A larger group intervention was conducted in a residential service for adults with intellectual disabilities. A total of 52 staff members took part, supporting ten service users living in three different settings. The outcomes of the intervention and the implications for further research are discussed.

### **5.2 Introduction**

The systematic review (Chapter 2), qualitative study (Chapter 3) and pilot study (Chapter 4) identified not only that there is a lack of research into improving procedural fidelity in human services, but also an absence of procedural fidelity monitoring (or even awareness of what it is) in practice. The pilot study consisted of implementing an intervention package in a residential home for adults with intellectual disabilities. The intervention package included behavioural skills training for frontline staff and ongoing observation and feedback delivered by the frontline manager. The pilot study results suggested that these interventions may have a positive impact on procedural fidelity levels of staff implementation of behaviour support plans. A number of challenges and barriers to delivering behavioural procedures with high fidelity in adult residential services were identified.

One such challenge to high fidelity identified was the method through which frontline staff are trained to implement support plans. Chapters 3 and 4 established that the standard practice used in these services is to train staff to understand and implement a Behaviour Support Plan (or meet with them to discuss it), to presume that the plan will be implemented correctly and to anticipate that the challenging behaviour will reduce following this. The study conducted

in Chapter 4 also identified that the time and resources required for successful frontline staff training in positive behaviour support plans can be a major challenge. Within the organisational policy, a great deal of time and resources are dedicated to providing the staff with general PBS training up to a FETAC Level 5 qualification. This training provides a basic knowledge in positive behaviour support, and an introduction to functions of behaviour. Challenges presented by this training policy became evident in the pilot study when it was identified that only 50% of the participants had completed it, despite being members of the organisation for an average of 4 years. It was also apparent that there was little follow-through on the organisation's policy for managers to take an additional qualification in Positive Behaviour Support for Leaders as neither manager in the setting had completed this course. Accountability and prioritising adequate training in PBS for staff is clearly a huge challenge for services, and for the implementation of plans. All staff training in regards to first aid, fire safety and food hygiene was up to date, and refresher courses were taken regularly.

The pilot study showed that it was feasible to implement an organisational approach to increasing fidelity in adult services and that staff are willing to engage in the process. Due to the limited experimental control within the pilot study, a more robust investigation into the methods used is warranted. To ensure high levels of procedural fidelity, a broad intervention package is essential to address these wide-reaching challenges. Behaviour Skills Training (BST) implemented in Chapter 4's pilot study has been found to have had a positive impact on the levels of procedural fidelity in the implementation of support plans as it can immediately address the education and training barriers. Chapter 4 also highlighted that success was achieved in training staff to implement behaviour support plans, as displayed by the increase in fidelity levels following BST with staff. The BST intervention in Chapter 4 did not achieve 100% fidelity across support plans and it was after the introduction of a second element to the

intervention (ongoing observation and feedback) that procedural fidelity levels increased further.

Ongoing observation and feedback were introduced into the intervention package as a means to address the identified challenge that staff only receive support in a crisis. These interventions can be delivered using the *Practice Leadership Model* (Beadle-Brown et al., 2015) which was discussed in detail in Chapter 4. A further challenge identified in the pilot study was staff's difficulty in prioritising the PBS plan over other more administrative tasks. Staff were observed to engage in administrative tasks such as health and safety checks more readily than developing resources required for support plans, engaging in positive interactions with service users, or organising meaningful activities. One hypothesized reason for this is the fact that HIQA (who set the administrative standards) have the power to close a service down if things are not in an acceptable order. This is obviously vital from a health and safety view point for service users, but unfortunately many quality of life aspects of an individual service user's day may be considered a lower priority since there is no immediate, or apparent punitive consequence for the staff. In behavioural terms, the current contingencies reinforce HIQA compliant tasks and fail to reinforce Quality of Life tasks. Therefore, it will be useful to alter the contingencies of reinforcement to help reframe priorities for staff. In the spirit of positive behaviour support, it is likely that group incentives and rewards will motivate staff to engage in PBS plans in a more consistent and regular manner.

Informal information gathered during the pilot study revealed that staff had little motivation or incentive to engage in positive behaviour support guidelines when other work tasks were available. To increase the motivation, tangible incentives will be introduced in the current study. The aim of this element of the intervention is to pair positive feedback from managers and service users with the tangible reinforcement to ensure the feedback is more motivating in the future. This will allow for the incentive system to eventually be faded out as

staff become more engaged with the guidelines. The systematic review (Chapter 2) identified that when applied as an intervention to increase procedural fidelity of behaviour support plans, incentives had a medium effect size. Miller et al. (2014) utilised a lottery-based incentive programme, combined with manager feedback, to improve SEN staff's implementation of discrete trial training (DTT). It was observed that all three participants' levels of implementation fidelity increased following introduction of the intervention. As a side effect of the intervention, the authors noted that frontline staff and managers paid more attention to data collection because there was an additional motivation for them to keep it up to date.

An additional element of 'self-monitoring' will be a valuable component in ensuring organisation for staff, and the inclusion of a level of accountability. A challenge to implementation of support plans identified in the pilot study was the nature of shift work meaning that frontline managers cannot be in the house all the time to monitor ongoing daily work. A 'shift-planner' which staff can use to monitor their own activities will provide a level of accountability and a permanent product that can be used to inform frontline managers about the ongoing work in the houses when they are not on shift. Plavnick et al (2010) used self-monitoring, combined with behaviour skills training, to teach staff how effectively to implement behaviour interventions with young people with developmental disabilities in schools. Staff were provided with checklists which outlined the intervention and asked to complete these following implementation of the intervention. Plavnick et al (2010) found that self-monitoring increased procedural fidelity levels of implementation more than the BST alone, suggesting that to strengthen the effects of BST, additional intervention components must be included.

The current study's intervention package will include behaviour skills training for all behaviour support plans, to address the challenges of only receiving verbal instruction. The study will also slightly modify the support structure and the monitoring processes that are

already in place in an organisation for adults and children with intellectual disabilities, as well as including an element of accountability and positive feedback for staff. Staff will be required to engage in a self-monitoring system where they can record what elements of the plan they have completed during their shift, and what was not possible to do. A staff incentive system will be in place to support this. Table 17 outlines the different elements of the intervention, and the particular challenges identified that they seek to address.

Table 17: Interventions used in study

	Knowledge and skill set of staff	Support structure	Accountability
Consultation	X		X
BST	X		
Practice leadership training	X	X	X
Observation and feedback	X	X	X
Staff incentive		X	X
Staff self-monitoring	X	X	X

In summary, the current study combines common behaviour analytic interventions for behaviour change with the broader model of Practice Leadership in order to create a more solid support structure to increase staff implementation of behaviour support plans with high fidelity. The study aims to build on the pilot study, implementing the same intervention with some additions on a larger scale with a more robust experimental design. The research questions are:

- Does an organisational approach lead to improved fidelity across settings?
- Does an organisational approach to improving fidelity levels, impact outcomes for individuals with ID and staff across settings?

### 5.3 Methods

Broadly speaking, the measures and procedures used in the pilot study were implemented in the same way for the current study, with a number of exceptions. These exceptions include

the introduction of a self-monitoring shift-planner and staff incentive system as part of the larger intervention package. These elements of intervention were added in order to address challenges identified in the pilot study. To address some methodological issues identified in the pilot study, direct observational data of some service users engaging in behaviours of concern was collected.

### ***5.3.1 Experimental design***

The study used a non-concurrent multiple baseline design (NCMBD) across participants, embedded in different settings. In this context, a setting refers to a self-contained residential house within a larger organisation for adults with intellectual disabilities. Watson and Workman (1981) found that the non-concurrent baseline design is valuable in applied settings as it can give the researcher greater flexibility to establish functional relationships between treatment variables and behaviour changes. As last-minute changes and challenges can arise in applied settings, the non-concurrent design is useful to avoid these practical limitations. Due to practical factors the study began with observations in the first two houses at the same time and observations in the third house started eight weeks later. The NCMBD was only applied to the collection of procedural fidelity data. Additional data collected on service user outcomes was analysed individually for any intervention effects.

### ***5.3.2 Setting***

The study was conducted in three residential homes for individuals with intellectual disabilities in Dublin, Ireland. The houses were high support community houses, which follow the principles of the New Directions policy (2012) to guide their practices. New Directions is a government policy created to ensure individuals with intellectual disabilities are supported to progress and achieve goals and personal targets through their supports. The houses are nursing-led due to the medical needs that many of the services users have. Each house is home to six service users. All observations took place in the houses, and no observations were carried out



in the community as most behaviours of concern were reported to occur in the house. Behavioural Skills Training was conducted in the houses, and the Practice leadership training was carried out in the boardroom at the organisation's headquarters.

### ***5.3.3 Participants and sampling<sup>3</sup>***

Both employees and service users of a large organisation which provides residential and day services to adults and children with intellectual disabilities in Dublin, Ireland, took part in the study. Service users were considered secondary participants since the intervention did not involve any direct interaction or input from the researcher. The employees who took part were considered the primary participants. Quota sampling was used to select the participating houses. The criteria required for the houses to participate in the study were:

- A Person in Charge (PIC), deputy person in charge and a clinician assigned to the house
- At least one service user in the house who had positive behaviour support input
- Levels of challenging behaviour displayed by the service users could be considered mild, moderate or severe. (The organisation ethics committee did not request any limitations on the levels of challenging behaviour supported as had been the case in the pilot study).
- At least 90% of the full-time frontline staff should consent to take part in the study. This criterion was requested by the organisation's ethics committee to ensure staff did not feel pressured to take part, and if people chose not to, the research would be able to continue with the consenting participants.

The primary participants ( $n=52$ ) consisted of all frontline staff ( $n=42$ ) in the three residential houses, 3 PICs, 3 deputy-PICS, 3 clinical psychologists and 1 service manager. All

---

<sup>3</sup> For all participant information sheets and consent forms see Appendices R-U (Service user consent forms and information sheets remained identical to the pilot study. Clinician, frontline staff and frontline manager consent forms also remained identical to the pilot study)

participants remained for the duration of the study. Table 18 displays the characteristics of the primary participants.

Table 18: Characteristics of primary participants ( $N = 52$ )

<b>Characteristic</b>	<b>Data</b>
Gender ( $n$ )	
Female	38
Male	14
Age ( $M$ , range)	42, ( 21-56)
Job Title ( $n$ )	
Clinical Nurse Manager 1	3
Clinical Nurse Manager 2	3
Social care worker	20
Service Manager	1
Care Assistant	16
Nurse	6
Clinical Psychologist	3
Highest qualification ( $n$ )	
BSc	32
MSc	3
DClinPsyc	3
Leaving certificate	12
Undisclosed	2
Experience with Challenging behaviour in years ( $M$ , range)	10.4, (0.5 – 23.5)
Experience in current setting in years ( $M$ , range)	9.4, (0.5 – 18)

Ten service users, three female, seven male, consented to take part in the study as secondary participants. For the purposes of this paper they have been given pseudonyms displayed in Table 18. The service users' ages ranged from 23-56 ( $M=39.4$ ) years old. All service users had a diagnosis of moderate intellectual disability, while 3 also had a diagnosis of Down syndrome, and 5 had a diagnosis of ASD (data obtained from case notes). The behaviours of concern displayed by the service users included self-injurious behaviour (hand

biting, face-slapping, scratching); physical aggression (hitting, kicking, pulling hair); vocal outbursts; throwing objects; absconding; stealing food and property destruction (see Table 19 for details of target behaviours for reduction and increase). Six of the service users also had elements of their behaviour support plans which targeted increasing appropriate behaviours. These behaviours for increase included, using appropriate requesting for attention or drinks, sleeping for a minimum of 5 hour stretch at night, engaging in meaningful activities, making healthy choices around food and using a quiet room to help regulate when over stimulated. Behaviour support plans for services users had been in place for an average of 4.5 years. Four service users were vocal and used verbal communication in combination with visual supports to communicate. Six service users were non-verbal and used a combination of visual supports and Lámh to communicate. All service users agreed to allow the researcher to read and modify their plans, and to provide staff training based on the support plans.

Table 19: Target behaviours and measures for data collection for service user outcomes

Service User (Pseudonyms)	Target behaviour decrease	to	Target behaviour increase	to	Measure	Collector
<b>Charlie</b>	Hitting		N/A		Frequency Incident report forms	Frontline staff
<b>Mark</b>	Spitting		N/A		Duration	Researcher
<b>Steven</b>	SIB (Face slapping)		Request for drink/attention with visuals		Frequency data	Researcher
<b>Alan</b>	SIB		Request for help		Partial interval recording	Researcher
<b>Taran</b>	Aggression		Engagement in activities		Frequency incident report forms and daily notes	Frontline staff
<b>Mary</b>	Hair pulling		Use of quiet room		Frequency incident report forms and daily notes	Frontline staff
<b>Robert</b>	SIB		N/A		Frequency	Researcher
<b>Peter</b>	Removal of clothes		N/A		Frequency	Frontline staff
<b>Tom</b>	Night wakening		Sleep		Frequency	Frontline staff
<b>Maria</b>	Binge eating junk food		Making healthy choices, attending slimming world meetings		Permanent product: Weigh-in data	Slimming World volunteer

### 5.3.4 Measures and measurement

In the following section, for the sake of clarity, the measurement process is described,

followed by identification and description of the specific measurement tools used as part of this process.

**5.3.4.1 Observations and service user outcome data collection.** Observations were conducted by the researcher throughout the process on a weekly basis from baseline until the end of the intervention. Observations in Houses A and B occurred on Mondays at either 2.30pm to 4pm or 5pm to 6.30pm. Observations in House C occurred on Thursdays at either 7.30am – 9am or 2.30pm to 4pm. These times were chosen for the observations as they were busy times in the house, and challenging behaviour was reported to be more likely at these times. The activities that typically occurred in these times were transitions to or from day service transport, and house meals, when all service users would be in close proximity to each other. The observations occurred weekly for 26 weeks in Houses A & B and 22 weeks in House C.

Due to the COVID-19 lockdown, imposed in Ireland on 14<sup>th</sup> March, 2020, it was not possible for the researcher to carry out planned, follow-up maintenance observations. The safety guidelines of the organisation ruled that non-essential visitors would not be permitted to enter any houses in order to ensure the safety of all residents and staff.

*Procedural fidelity:* This was the main dependent variable of the study. The researcher developed data sheets based on LaVigna et al.'s (1994) Fidelity Checklist. Each checklist was individualised to each service user's support plan and identified the key guidelines and steps of the support plan. Data was recorded using the procedural fidelity checklist for each behaviour support plan. A step was considered complete if any staff member who interacted with the service users during the observation period was seen to implement the step. A step was considered incomplete if any staff member did not implement the step while interacting with the service user, regardless of whether they had done so previously. For example, one guideline was for staff to "prompt Steven to use visual choice board when speaking with him".

If, during the observation period, one staff member made use of the visual choice board three times, but did not make use of the choice board in other interactions, the step was marked incomplete. If a step was not relevant or applicable during the observation stage, it was marked N/A and a percentage was found for all included steps. At the end of each observation session, an average procedural fidelity score across all staff on shift was calculated.

*Observational practice leadership measure (Beadle-Brown, Bigby & Bould, 2015):*

The measure has five domains which are all scored out of 5, with a maximum score of 25. A higher score is considered a positive reflection of practice leadership levels, while a low score would indicate practice leadership is not strong in the service. These domains look at coaching staff, and the level of focus on service user lives. The measure has good internal consistency and acceptable inter-rater reliability (Beadle-Brown et al., 2015).

*Incident report forms:* Pre-intervention and post-intervention incident report forms and daily notes were used as a proxy measure of pre-intervention and post-intervention outcomes for five of the service users. These intervention forms are completed by frontline staff when a behaviour of concern occurs detailing what they observed to occur during their shift, and are part of the organisation's behaviour support policy. Daily notes record the occurrence of positive behaviours and meaningful engagement in activities. Staff had not received any formal training in collecting data on behaviours of concern.

*Direct observations of service users:* The researcher also conducted direct observations of four service users who displayed higher frequency behaviours of concern in order to gather a clearer picture of the level of behaviour occurring. It was only possible for the researcher to collect direct observation data for four service users as the frequency of occurrence of behaviours of concern for other service users was too infrequent to be able to collect representative data during scheduled observation sessions. Different dimensions of behaviour were measured as appropriate to the behaviour. Data was collected relating to other service

user target behaviours by the frontline staff during their day to day work. Table 18 outlines the different target behaviours for each client, the methods used to measure these, and the individuals responsible for collection of data.

*Permanent product:* Finally, for one participant, permanent product data in the form of the service user's weight was recorded by Slimming World volunteers at weekly Slimming World meetings. These measurements were shared with the researcher.

**5.3.4.2 Questionnaires.** As in the pilot study, all frontline staff received copies of the BPI-01, SESQ and Challenging Behaviour Self-Efficacy scale after they consented to take part in the study. They were asked to complete these and return them to the researcher within two weeks. Three months after completion of observations, the participants were given the same questionnaires and the Adapted Intervention Rating Profile, and asked to complete and return them to the researcher within two weeks.

*Behaviour Problems Inventory (BPI-01):* The Behaviour Problems Inventory (BPI-01) (Rojahn, et al., 2001) was completed pre-intervention and post-intervention as a rating of client outcomes (i.e., frequency and severity of challenging behaviour). The BPI-01 is a 52-item informant-based rating scale used to assess the severity and frequency of problem behaviours in individuals with intellectual disabilities. The inventory is split into three sections covering three different types of problem behaviours. These are; self-injurious behaviour (items 1-15), stereotyped behaviours, (items 16-40) and aggressive/destructive behaviours (items 41-52). The BPI-01 was found to have robust reliability and validity as a behaviour rating tool for adults with intellectual disabilities (Rojahn et al., 2001)

*Frontline staff satisfaction questionnaire (SESQ; Beadle-Brown et al., 2003):* The SESQ, (Beadle-Brown et al., 2003), parts A and B were distributed to all frontline staff. Part A consists of 19 checklist questions. These questions concern age; gender; ethnicity; disability; length of time working with people with learning disabilities; previous work experience; length

of time working in current position; length of shift and number of days absent in past 12 months. The checklist also addresses previous training and the client base that they support. Section B focuses on job satisfaction and management style. Two rating scales are utilised for this. The first is the Dyer scale, which is a measure of job satisfaction. The Dyer scale comprises of twenty four items rated on a Likert scale ranging from 'very dissatisfied' = 1 to 'very satisfied' = 5. The second scale employed was the Freeman scale which is a measure of quality of management. The Freeman scale comprises of a 17-item questionnaire scored on a Likert scale. Items 1-12 are on a five point scale ranging from 'Always' = 1 to 'Never' = 5. Item 12 is rated on a five point scale ranging from 'Very Easily' = 1 to 'Not Easily at all' = 5. Finally, items 14 and 15 are rated on a four point scale ranging from 'Completely' = 1 to 'Not at All' = 4.

*Staff self-efficacy scale (Hastings & Brown, 2002):* The measure used a scale of four self-efficacy items: feelings of (1) confidence, (2) satisfaction in dealing with behaviours, (3) a perception that they have a positive impact on behaviour and (4) a rating of how difficult they find it to work with challenging behaviour. Each item was rated on a 7-point scale. The ratings were added to form a total self-efficacy score.

*Intervention rating profile (IRP-15; Martens, Witt, Elliot, & Darveaux, 1985):* The IRP-15 is a 15-item questionnaire designed to assess the acceptability of an intervention or treatment. The adaptations made by the researcher can be found in Appendix G. It was used in this study to assess the social validity of the staff intervention, and to explore whether staff found it an acceptable intervention to improve procedural fidelity.

**5.3.4.3 BSP Quality rating:** All behaviour support plans involved in the research were rated for quality by an experienced third party who was blind to the purposes of the study. The BSP-QEII was used. Quality ratings were carried out on both the original and adapted



behaviour support plan at the same time. The person rating was not informed which was the pre-intervention or post intervention support plan.

*Behaviour Support Plan Quality Evaluation Tool (BSP-QEII; Wright, Mayer & Saren, 2013)*: The evaluation tool consists of 12 domains which identify if specific clinical and implementation elements of the BSP are present. There are 9 clinical domains and 3 implementation domains to be assessed. The BSP-QEII was found to have good inter-rater reliability, and good utility for assessment of BSPs for adults with ID in community support services (McKilly et al., 2013).

### 5.3.5 Ethics

Ethical approval was received from the Tizard Centre Ethics Research Committee in addition to the Organisational Ethics Committee (See Appendix V). Consent was gathered using the same procedure as the pilot study.

### 5.3.6 Procedure

The intervention was carried out in three phases: consultation, baseline and intervention.

Figure 6 displays the intervention process and further detail of each phase is described below.

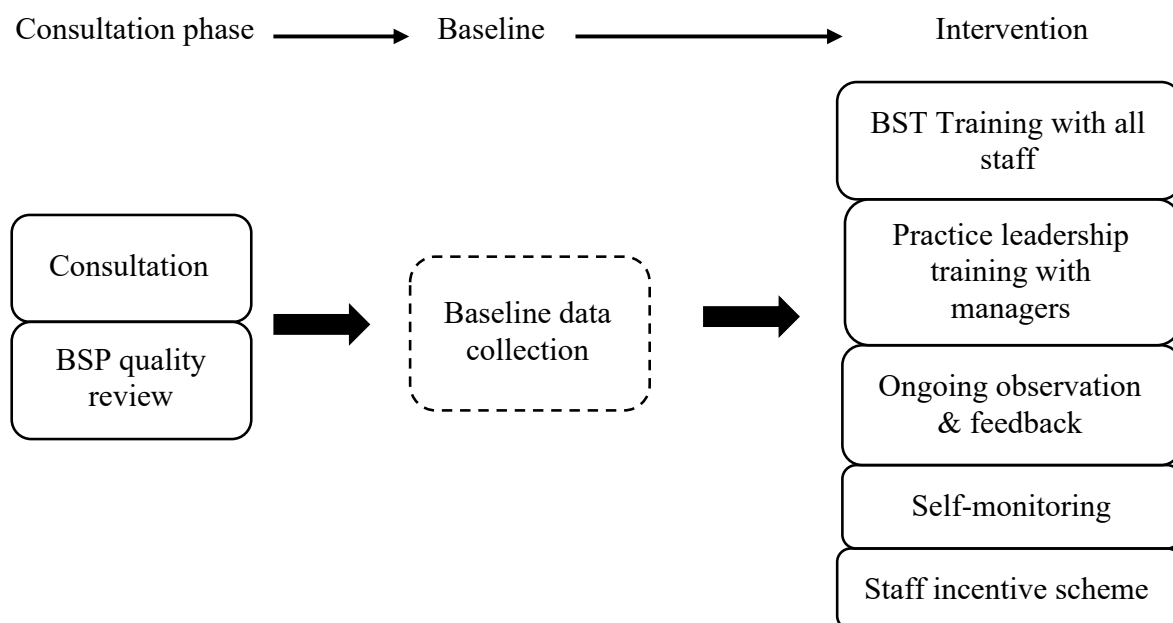


Figure 6: Organisational Intervention Process

**5.3.5.2. Consultation procedure:** As with the pilot study, this intervention involved a substantial reworking of existing practices across a service, rather than one single, direct intervention strategy. Before beginning any observations or data collection, a consultation period occurred with all staff. This consultation period followed the same steps as the pilot study with no changes made. The researcher again met with all key workers, clinicians and front line staff to discuss the current behaviour support plans. The FBAI (O'Neill et al., 1997) was used to guide the consultation interviews. Following consultation, the researcher supported the clinicians to use the BSP-QEII to score the quality rating of each behaviour support plan. Using this scoring system, each clinician made note of both clinical and implementation elements of the behaviour support plan which were missing or that warranted more detail. Finally, the researcher had a second consultation with the clinician and quality rating information scores were discussed. The researcher and clinician collaborated to modify and update the behaviour support plans to include the frontline staff input and to ensure they included the information required for a high-quality rating score. The intervention focus was to support the clinician to develop a BSP that was consistent with BSP-QEII standards. Providing further detail on the modifications to the BSPs was beyond the scope of the thesis and the researcher did not receive consent to share any details of individual support plans.

**5.3.5.3 Baseline:** During baseline in each setting, observational data were recorded for each staff participants' fidelity of implementation as described in section 5.3.4. Baseline observations occurred weekly over a period of 4 weeks in house 1 and 8 weeks in house 2 and 12 weeks in house 3.

**5.3.5.4 Intervention:** Following baseline observations, a full intervention package was implemented in each setting. The intervention package comprised of the following interventions: staff training, observation and feedback, self-monitoring and group contingencies and incentives. These interventions are described in detail below.

*Staff training:* The strategies used to train staff remained the same as the pilot study. The researcher used behavioural skills training to teach staff how to implement the support plans. The BST took place in the houses, despite this being considered a limitation in the pilot study. The house proved to be a good location for the training to take place because the researcher and staff had access to equipment and areas which were a trigger for behaviours of concern such as hoists and kitchen areas. Having training on-site allowed for extremely practical demonstrations of interventions and strategies to be carried out.

The practice leadership training took place in a more formal setting, in the organisation's board room. The frontline manager and deputy frontline manager received training in practice leadership together. The training included didactic training on practice leadership, discussion of current practices, engaging in observation, and providing feedback. A section of the training was dedicated to identifying the staff members who might be resistant to feedback, and trouble-shooting about how to deal with different scenarios. Before completing the training, all managers were required to develop an observation schedule for the upcoming two weeks.

*Observation and feedback:* As in the pilot study, observation and feedback were used as part of the intervention. To ensure consistency in the level of support, both the PIC and deputy PIC were given responsibility to carry out observations and feedback sessions. The PIC and deputy PIC each took 10 minutes, twice a week, to observe each frontline staff member in their day to day working, using the fidelity checklist as a guideline. Following this, they provided immediate feedback. At the end of each month, a more formal feedback session was provided for each staff member which lasted between 15-20 minutes each. During this feedback session, the frontline staff had the opportunity to give input to the support plan which would be relayed to the clinician or service manager.

*Self-monitoring:* Staff were required to observe and evaluate their own behaviour after each shift by declaring if they had completed tasks related to the Positive Behaviour Support plans. The self-monitoring shift planners were included in the already established hand-over forms which staff were reliably following each shift. Staff were informed that there would be no punitive consequences if tasks were not completed, but were asked to provide comments to explain why something could not be done. The researcher reviewed the self-monitoring data sheets weekly, and provided the staff with feedback in graph format. Staff also received points for completing all tasks during the day and this data was used for the incentive part of the intervention, described below.

*Group contingencies and incentives:* Fortnightly competitions were run in each house and the staff members with the most points were rewarded with an extra hour off work that week. The organisation gave approval for each individual house manager to determine an incentive which would be appropriate for each house. The researcher did not take part in discussions about what incentive to offer staff and all house managers came up with the same incentive scheme. The fidelity levels for this part of the intervention were taken from the staff self-monitoring sheets. Each house divided their frontline staff into smaller teams of 3-4. This was done randomly by the frontline manager and group morale was encouraged by requesting that teams give themselves a name. A white board was displayed in each house office with the team names and daily fidelity scores were displayed at the end of each week. Every member of the staff team that achieved the highest fidelity levels during a two-week period, were given two time in lieu hours to be used within the following month.

*Maintenance:* Maintenance data was scheduled to be collected three months after data collection ceased in each house. Due to the COVID-19 lockdown, the researcher was unable to gather this data.

### **5.3.7 Reflexivity**

Reflexivity is described as “analytic attention to the researcher’s role in qualitative research” (Gouldner, 1971, p.16) and is an acknowledgement that the researcher is part of the social world they study (Ackerly & True, 2010). Palagnas et al (2017) suggest that it is the duty of every researcher to be committed to reveal and share all their reflexivities for further learning and theory building.

The researcher acknowledges that personal preconceptions of residential houses may have affected the consultation process and development of training. The researcher has worked in organisations similar to those the participants were employed in as a frontline staff member, frontline residential manager and as a behaviour specialist and was aware that personal experiences could produce leading questions, or place a focus on similar experiences during the consultation. To avoid this, the researcher used the FBAI guided interview to structure the consultation process. The researcher was clear about her role as a collaborator with the clinician, to ensure that the clinician’s view and input were included. The researcher also maintained a reflective journal throughout the study to support discussion in supervision and to highlight any ongoing issues or challenges in the study process.

### **5.3.7 Inter-observer agreement**

Inter-observer agreement (IOA) was measured for 28.3% of all the sessions across all settings by a trained observer for procedural fidelity scores. No IOA data was collected for the observations of service user behaviour outcomes due to the difficulties in arranging times to observe behaviours which occurred very infrequently. The second observer was a trained behaviour analyst who received separate training in all support plans in place. IOA was obtained for 26.9% of sessions in settings 1 and 2 and for 31.8% of all sessions in setting 3. Total count data was used to calculate IOA between the researcher and the trained observer. The number of agreements were divided by the number of agreements plus disagreements and

multiplied by 100 to produce a total count IOA percentage for that session. The mean agreement between the two observers for setting 1 was 98% (Range: 86.7% - 100%); for setting 2 was 96% (Range: 93% - 100%) and for setting 3 was 93% (84.2% - 98.7%). Averaged across settings the reliability of fidelity of intervention implementation was 95.7%.

## 5.4 Results

### *Does an organisational approach lead to improved fidelity across participants and settings?*

Figure 7 displays the overall procedural fidelity levels by setting (averaged across all staff and support plans). An increase in overall procedural fidelity levels of implementation can be observed across all three settings following the implementation of the intervention. Procedural fidelity levels remained higher than baseline across all three settings throughout the intervention period.

Figure 8 displays the procedural fidelity levels of implementation of behaviour support plans for all 10 service users, embedded in three settings. Data points correspond to the average levels of procedural fidelity across all staff present during the observation. Staggered baselines were at observation sessions 4, 8 and 12. Procedural fidelity levels in baseline stage for the first setting, were all stable and below 50%. Procedural fidelity levels in baseline stages for settings 2 and 3 were more variable and ranged from 20%-100%. Figure 8 displays that all behaviour support plans were implemented with higher levels of fidelity following intervention. Following intervention in all settings, implementation of Steven, Maria, Alan, Tom and John's behaviour support plans increased immediately to between 70% and 100% fidelity and remained stable at these levels for the duration of the observations. Implementation of Mark, Charlie, Charlie, Mary and Robert's behaviour support plans increased slightly, and followed an upward trend throughout the observations.

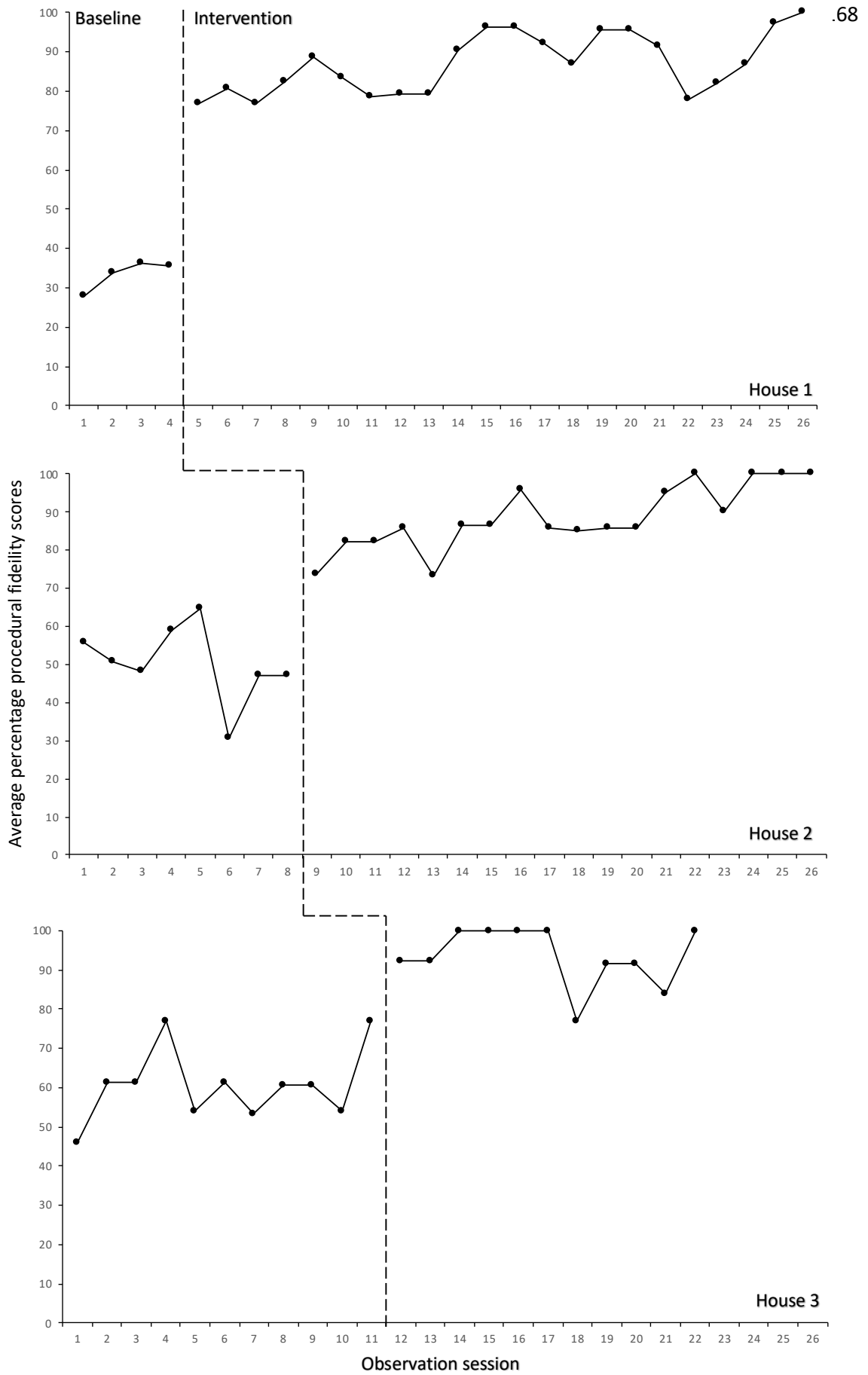


Figure 7: Average procedural fidelity levels of all behaviour support plans across settings

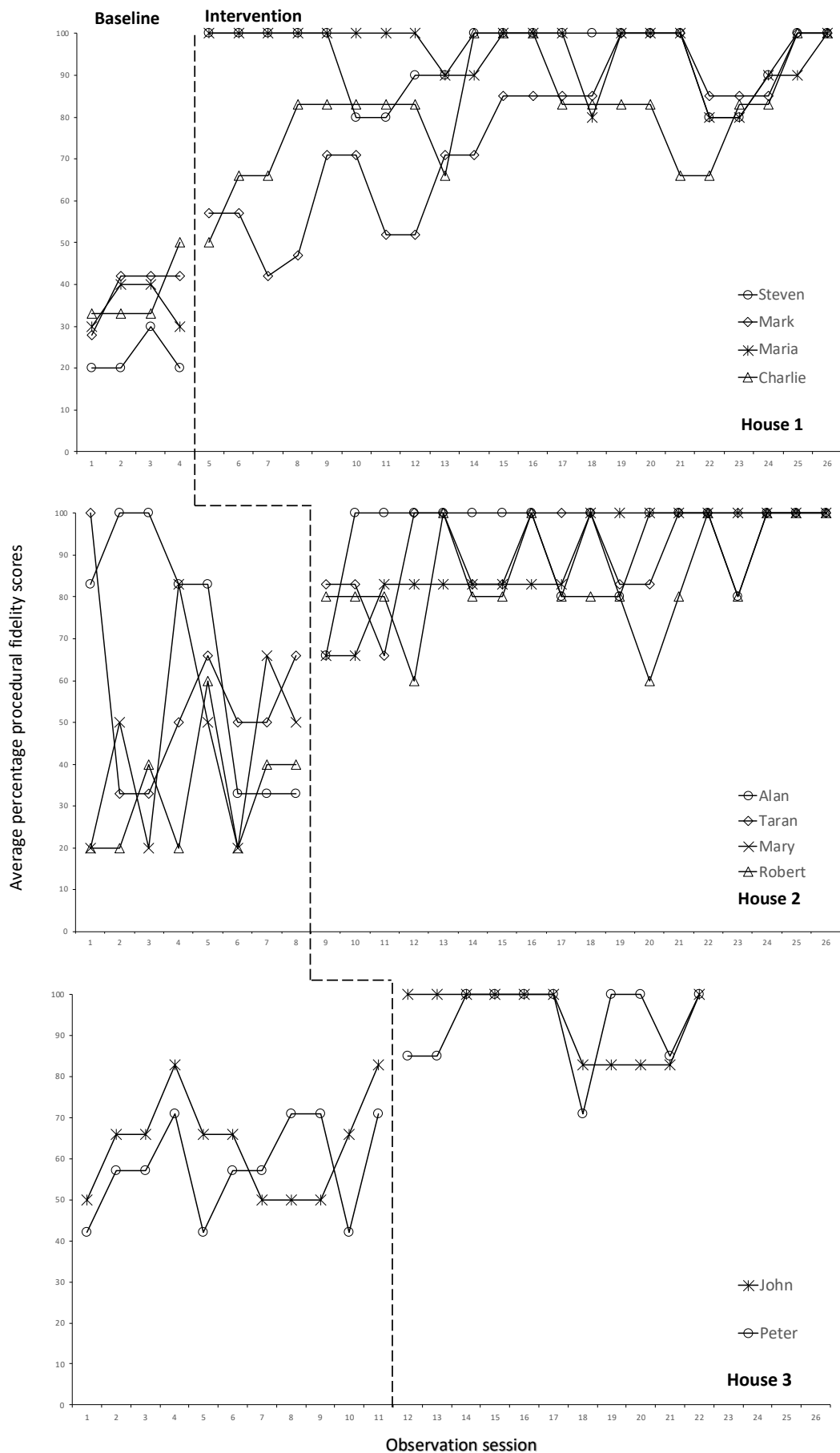


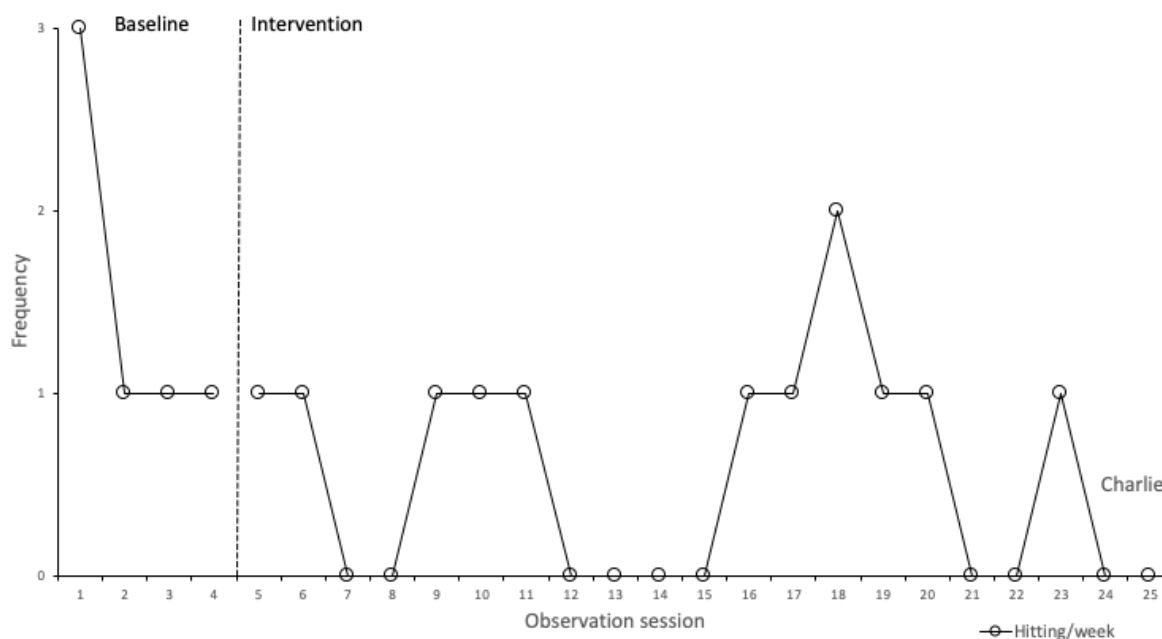
Figure 8: Procedural fidelity levels of implementation of behaviour support plans across three different settings



***Does an organisational approach to improving fidelity levels impact outcomes for individuals with ID and staff across multiple settings?***

Individual graphs are presented in the following section because of the variability of the types of behaviour displayed by all service users. It was necessary to record data using different methods.

**House 1:** Figures 9, 10, 11 & 18 relate to the service users who lived in House 1. Figure 9 displays data gathered by frontline staff on the number of occurrences of hitting behaviour displayed by Charlie per week. This was recorded in the service's usual 'incident report form' style and reviewed by the researcher each week. During baseline stage, Charlie was engaging in 'hitting' behaviour an average of 1.5 times per week (Range: 1-3). Following intervention 'hitting' behaviour occurred 0.6 times per week (Range: 0-2).



*Figure 9: Occurrences of hitting behaviour per week displayed by Charlie*

Figure 10 displays duration of spitting behaviour displayed by Mark during 45 minute observation periods conducted by the researcher. During baseline Mark was engaging in

spitting behaviour for an average of 24.25 minutes (Range: 16-33 minutes) of the 45 minute observation sessions. Following introduction of the staff procedural fidelity intervention, the average amount of time Mark engaged in spitting behaviour was 5.7 minutes (Range: 0-14 minutes).

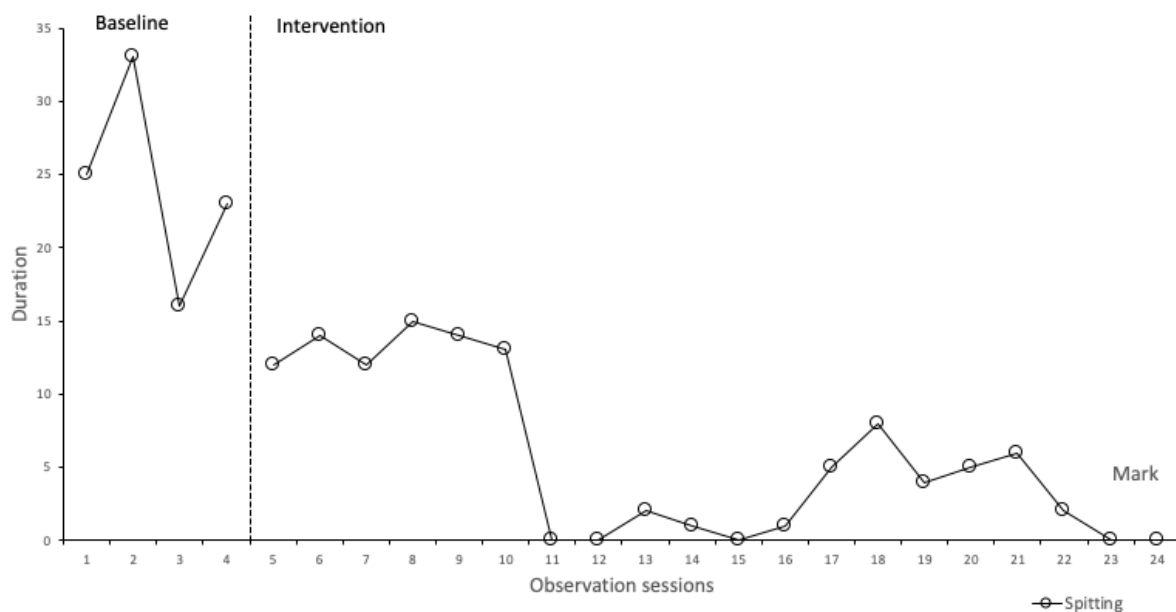
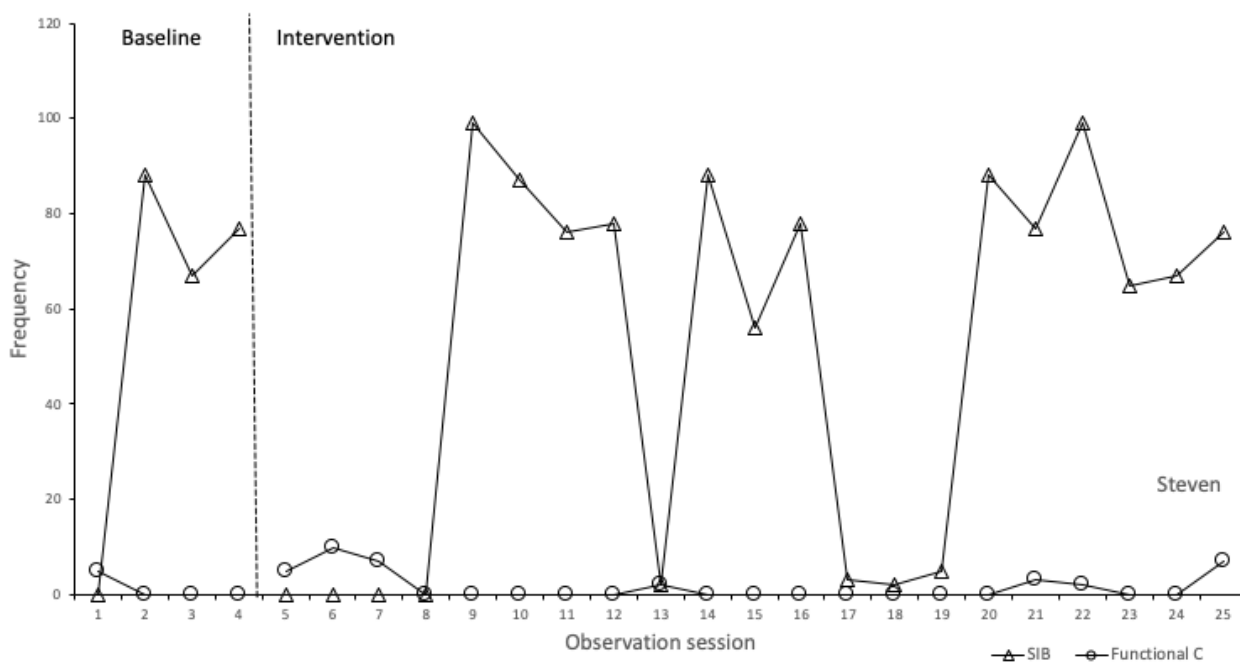


Figure 10: Duration of time spent engaging in spitting behaviour during 45 minute observation period: Mark

Figure 11 displays the occurrence of self-injurious behaviour and appropriate requesting displayed by Steven during a 45-minute observation period. Frequency data was collected by the researcher. During baseline, Steven engaged in self-injurious (hitting) behaviour an average of 58 times (Range: 0-88) in the 45 minute period. Following intervention Steven was observed to engage in self-injurious hitting behaviour an average of 49.8 times (Range: 0-99). During baseline Steven was observed to use functional communication an average of 1.25 times (Range: 0-5). Following intervention, Steven was observed to use functional communication an average of 1.71 times (Range: 0-10) across all observation sessions.



*Figure 11: Occurrence of SIB and appropriate functional communication responses displayed by Steven during 45 minute observation sessions*

**House 2:** Figures 12, 13, 14 & 15 refer to support plans of individuals who lived in house 2. Figure 12 displays the occurrence or non-occurrence of SIB (Head slapping) behaviour, and appropriate communicative responses with staff displayed by Alan during 45 minutes observation sessions carried out by the researcher. During baseline, Alan was observed to engage in SIB in 4 of the observation sessions. He displayed appropriate communicative responses (touching staff on wrist, tapping staff on shoulder) during two observation sessions. Following the staff procedural fidelity intervention, occurrence of SIB dropped, occurring twice across 20 observation sessions, while occurrence of appropriate communication responses increased and occurred in 14 of the 20 observation sessions.

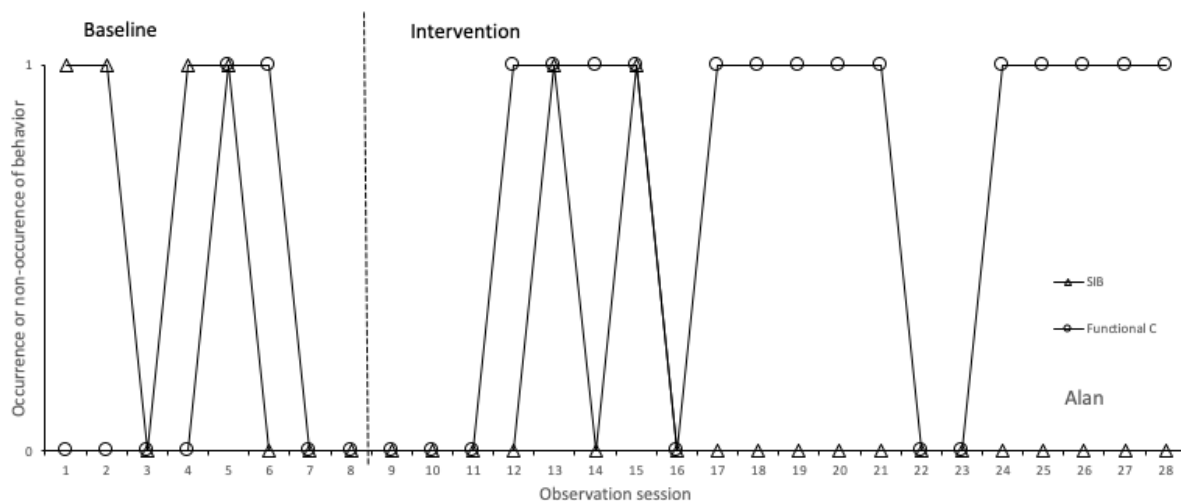


Figure 12: Occurrence or non-occurrence of SIB and appropriate communication response displayed by Alan during 45 minute observation sessions.

Figure 13 displays the occurrence of aggressive behaviour (hitting and kicking) per week, and the number of meaningful activities occurring per week for Taran. During baseline stage, Taran was engaging in aggression an average of 7.75 times per week (Range: 3-10). Taran had engaged in an average of 1.75 meaningful activities a week (Range: 1-3). Following the staff procedural fidelity intervention, the average occurrence of aggressive behaviours was 4.2 (Range: 0-10), and the average number of meaningful activities that Taran engaged in per week was 14.3 (Range: 5-22). Both levels of meaningful activity and aggressive behaviour remained quite variable for the first half of the observation period, but grew more stable in the second half, with the number of meaningful activities above baseline levels as the number of occurrences of aggression per week remained below baseline levels.

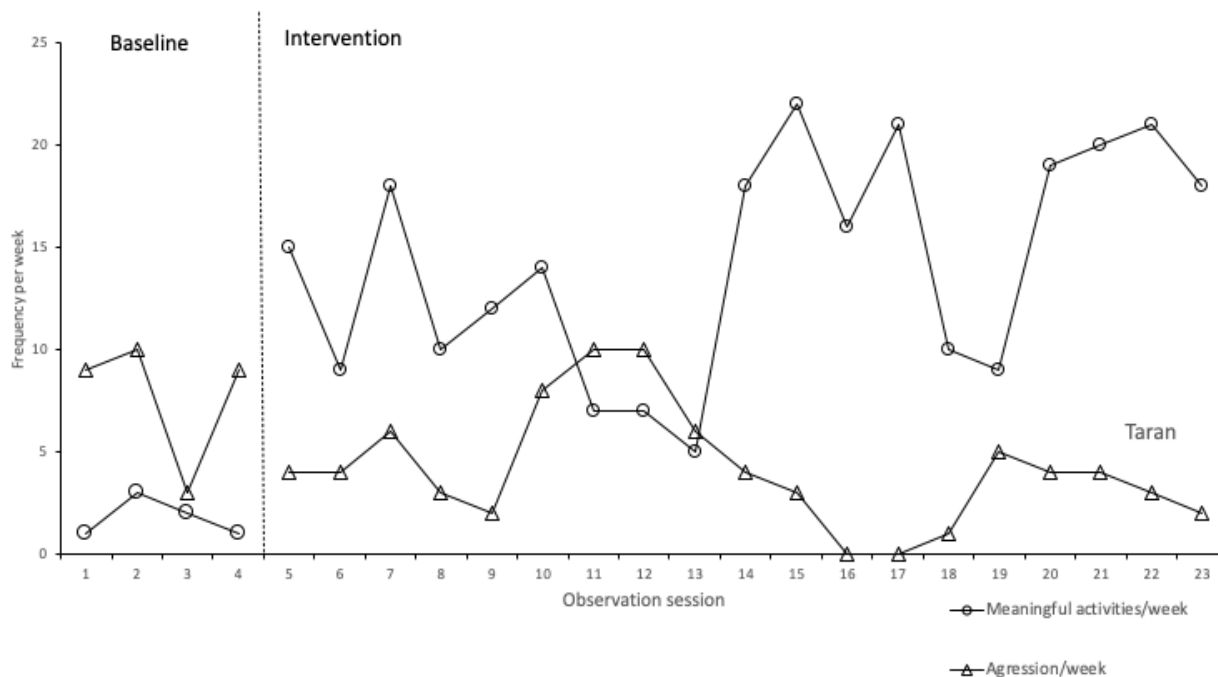


Figure 13: Occurrence of aggressive behaviour per week, and engagement in meaningful activities per week displayed by Taran

Figure 14 displays the occurrence of ‘hair-pulling’ behaviour by Mary, and the number of times per week she requested to access the quiet room available in her house per week. During baseline, Mary was engaging in hair-pulling behaviour an average of 5 times per week (Range:3-8) and she did not access her quiet room at all during this period. Following staff procedural fidelity intervention, the average number of times Mary engaged in hair pulling behaviour was 3.1 times per week (Range: 0-8) Following the intervention, Mary accessed her quiet room an average of 6.7 times per week (Range: 2-15).

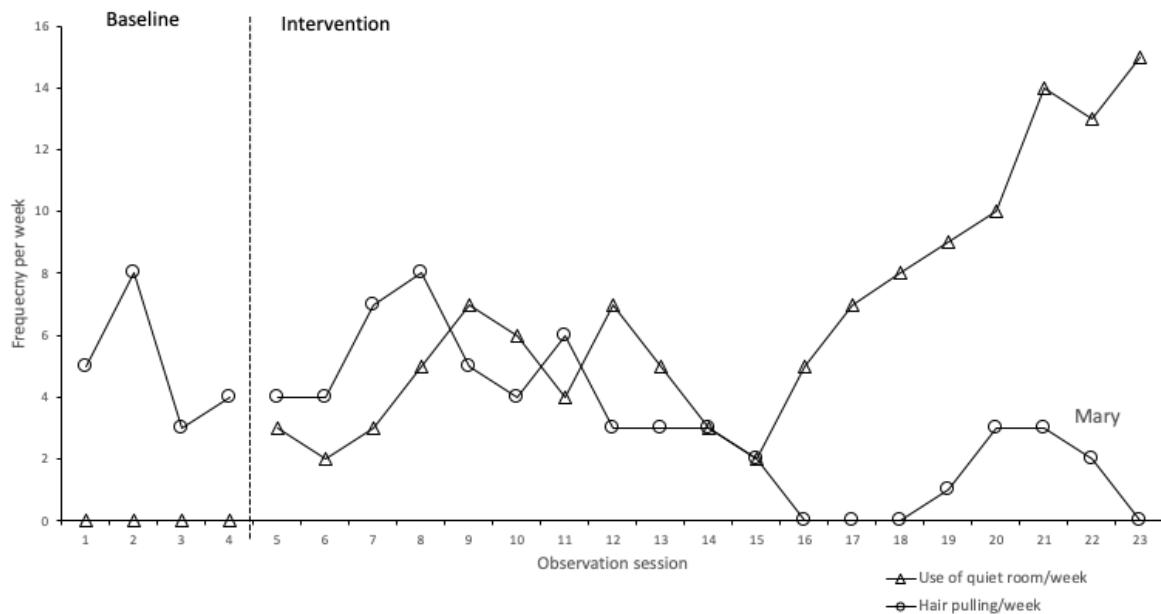


Figure 14: Occurrence of hair-pulling behaviours displayed by Mary per week and number of times Mary accessed ‘quiet room’ per week.

Figure 15 shows the frequency of SIB (slapping) displayed by Robert during transition from the house to bus. Transitions took between 10 and 17 minutes. During the baseline phase, Robert engaged in SIB an average of 46.6 times (Range:23-66). Following implementation of the staff procedural fidelity intervention, the average frequency of SIB was 4.05 (Range: 0-35).

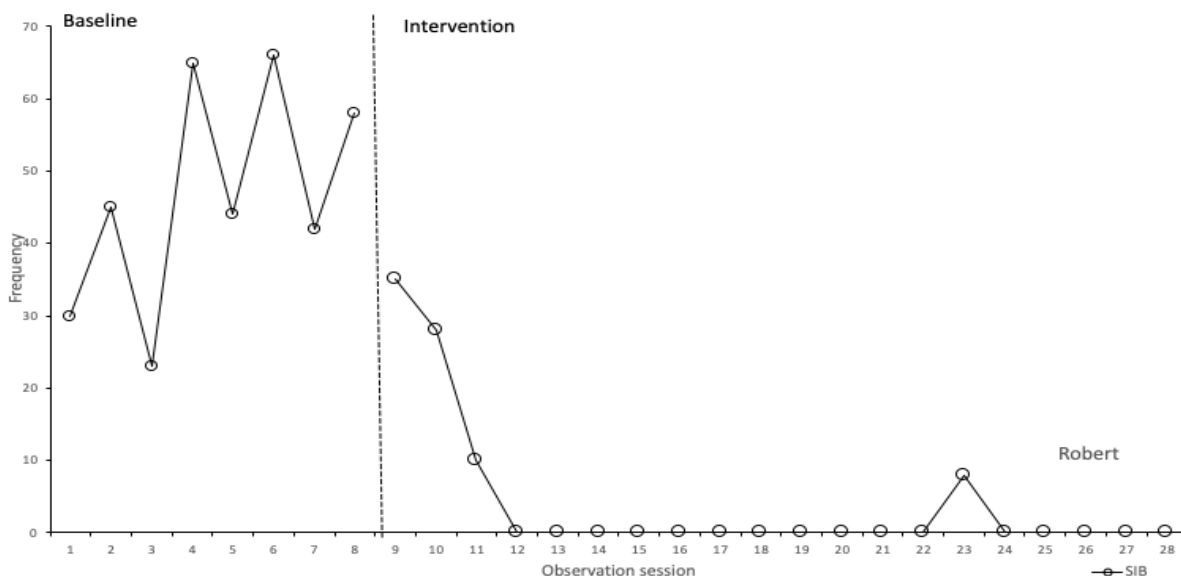
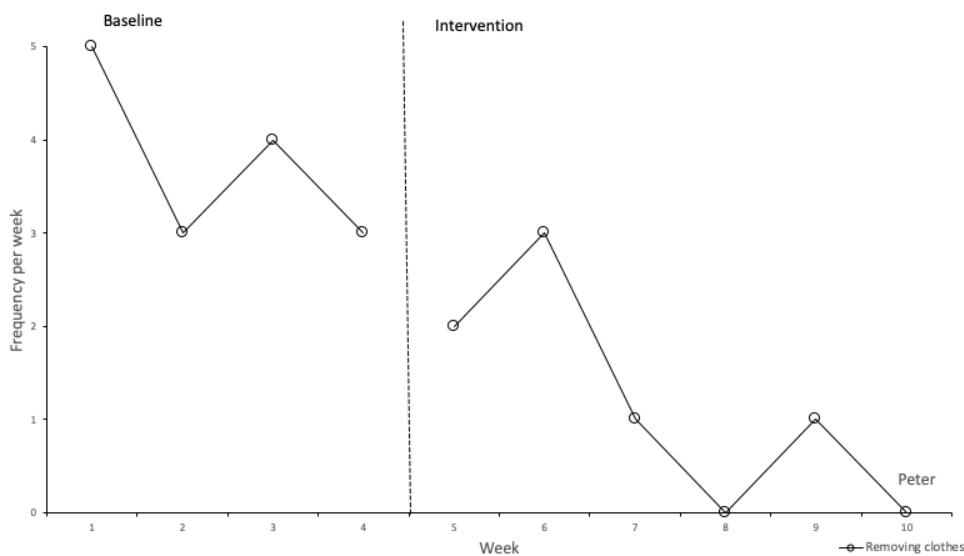


Figure 15: Occurrence of SIB during Robert’s transitions from house to bus

**House 3:** Figures 16 & 17 refer to the support plans for individuals who live in house 3. Figure 16 displays the number of times Peter removed his clothes while in a communal area in his home per week. During baseline stage Peter removed his clothes an average of 3.75 times a week (Range: 3-5). Following the staff procedural fidelity intervention, average frequency of the behaviour was 1.2 times per week (Range: 0-3).



*Figure 16: Frequency of removing clothes in communal areas displayed by Peter per week*

Figure 17 depicts the number of ‘full-night’s sleep’ Tom had per week. The definition of ‘full-night’s sleep’ was guided by a sleep specialist and was to include any night when Tom slept for 5.5 hours or more. During baseline, Tom did not have a single full night’s sleep over the four-week period ( $M=0$ ). Following implementation of the staff procedural fidelity intervention, Tom had an average of 4.3 full night’s sleep per week (Range 2-6).

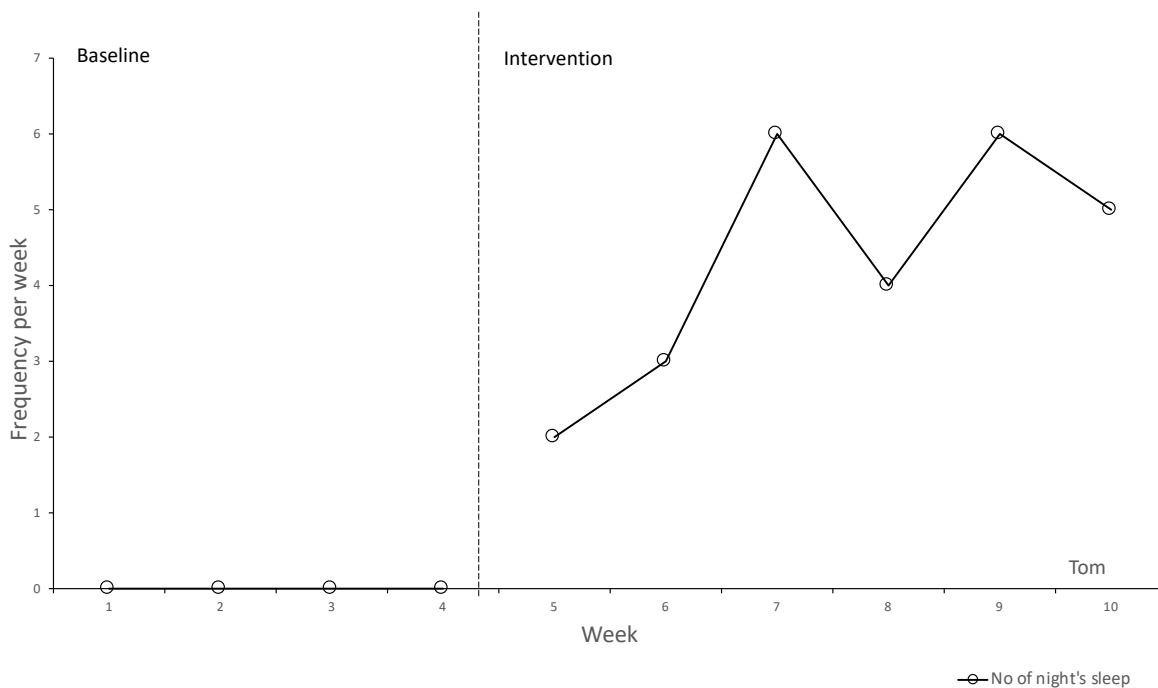


Figure 17: Number of full night's sleep per week

Figure 18 displays Maria's weight recorded at weekly slimming world meetings. No baseline data was gathered as it was not deemed ethically appropriate to ask Maria to be weighed for the purposes of this study. Figure 18 displays a steady downward trend in weight from 230lbs initially to 198lbs at the final data collection session. This was a total weight loss of 32lbs over 19weeks.

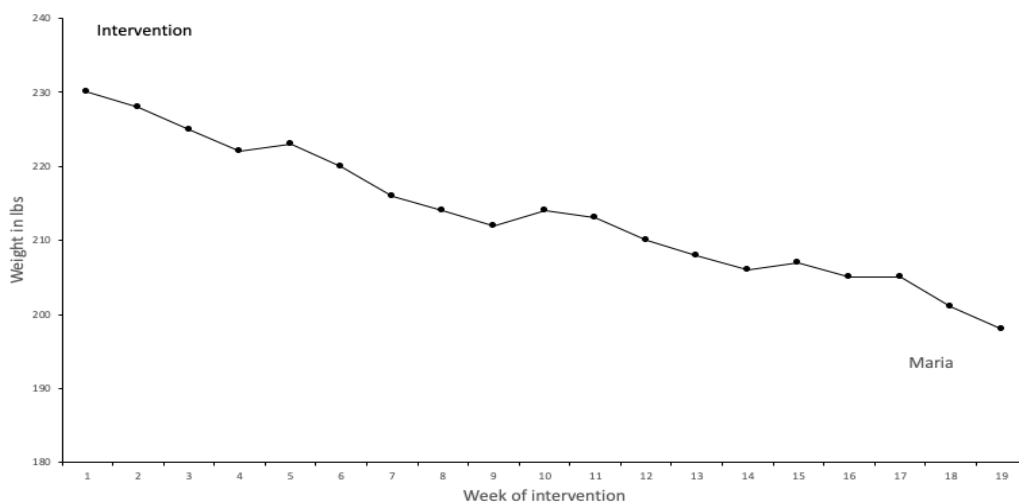
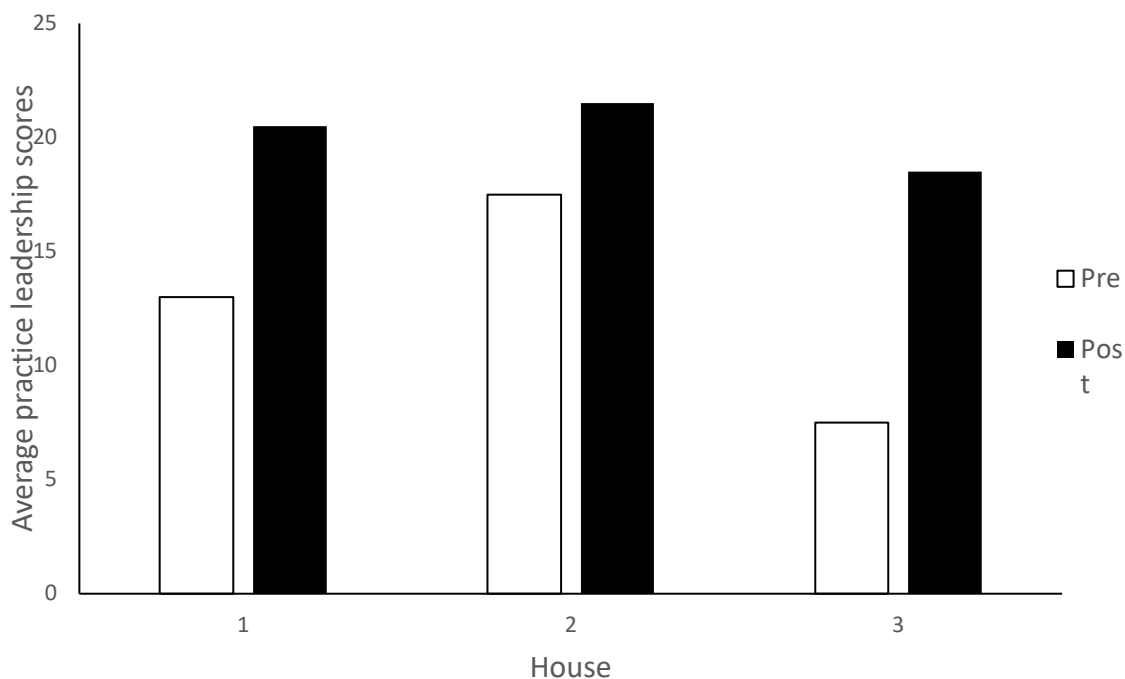


Figure 18: Weight (lbs) measured at slimming world meetings post-intervention



*Observational practice leadership measure:* The observational practice leadership measure was carried out pre-intervention and post-intervention by the researcher in each residential house. Observations were conducted on the final day of data collection for each household. As there was concern about ‘lockdown’ occurring due to the COVID-19 pandemic, this data was gathered 4 weeks earlier than initially planned. The measure was carried out with the house manager and the deputy manager as they were both involved in delivering the coaching and feedback element of the intervention. The practice leadership measure has a maximum score of 25. Figure 19 displays the average pre-intervention and post intervention scores for all managers and deputy managers across the different settings. A full breakdown of individual manager and deputy manager scores can be found in Appendix W.



*Figure 19: Comparison of average observational practice leadership scores (out of a total 25) pre-intervention and post-intervention across settings*

**Questionnaires:** Sixteen staff (38.1%) completed and returned the BPI-01, Staff self-efficacy scale and the IRP-15 questionnaires post intervention. No copies of the SESQ were returned post intervention. Four completed questionnaires came from House one, seven came from House two and five came from House three.

*Behaviour problem inventory-01 (BPI-01) measure:* Frequency of SIB was reported to reduce in settings one and three, but remained the same in setting 2. The severity of SIB was reported to reduce across all settings, with only a small reduction in setting 2. Average scores of frequency and severity stereotypy were reported to reduce across all settings with the largest reduction seen in setting 3. Finally reports of frequency of aggression reduced across all settings, with the largest reduction seen in setting 2, however reports of severity of aggression were increased slightly in settings 1 and 2. Severity levels of aggression in setting 3 were reported to have reduced. See Table 20 for a breakdown of scores across settings. A more detailed breakdown of scores across each individual support plan can be found in Appendix X.

Table 20: Average Behaviour problems inventory-01 scores pre intervention and post intervention across settings

		Frequency		Severity	
		Pre-intervention (range)	Post-intervention (range)	Pre-intervention (range)	Post-intervention (range)
Setting 1	SIB	14.75 (0-22)	10.5 (0-22)	9.5 (0-20)	7.75 (0-20)
	Stereotypy	15.25 (6-22)	14 (5-20)	10.25 (3-16)	9.25 (2-17)
	Aggression	4.5 (2-5)	2 (0-4)	5.25 (3-10)	5.5 (1-12)
Setting 2	SIB	2.3 (1-5)	2.3 (1-5)	1.67 (1-3)	1.3 (1-2)
	Stereotypy	6.3 (0-19)	6 (0-18)	1.3 (0-4)	0.6 (0-2)
	Aggression	14.3 (2-22)	2 (0-4)	5.25 (3-10)	5.5 (1-12)
Setting 3	SIB	12.6 (5-23)	6.3 (3-12)	9.67 (3-22)	6.67 (3-13)
	Stereotypy	19 (10-23)	14 (7-20)	9.67 (3-22)	6 (2-8)
	Aggression	4 (2-7)	2 (1-3)	8.33 (5-11)	6.67 (5-10)

*Staff self-efficacy scale:* Average staff self-efficacy scores pre-intervention and post-intervention are displayed in Figure 20 across the three different settings.

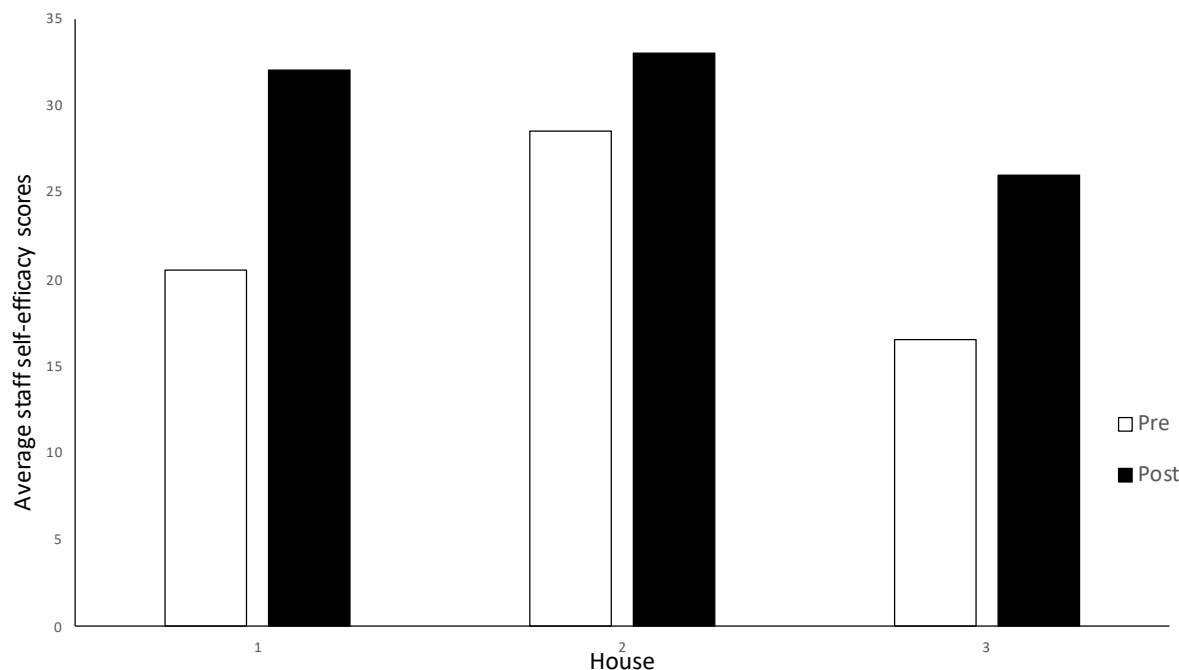


Figure 20: Average staff self-efficacy scores across three settings

*Social validity IRP-15:* An adapted version of the intervention rating profile-15 was given to all participants post intervention. In general, the participants' ratings of the intervention were positive. The mean rating across all questions and participants was 5.0 (range 4.0 to 6.0). Across all participants, the staff strongly agreed that the intervention was an acceptable intervention to increase procedural fidelity ( $M = 5.5$ ). The staff also agreed that the intervention would be appropriate for a variety of staff, support plans and settings. ( $M = 5.1$ ). The mean overall score across all participants was 75 (Range = 60 – 90) out of a possible 90.

*Behaviour quality plan rating:* A blind rater scored each individual behaviour support plan pre-consultation phase and post-consultation phase using the BIPQ-II scale. An average quality score was calculated for each house by adding the total score for each plan and dividing

by the total number of plans per setting. The comparison of quality plan scores across settings pre intervention and post intervention are displayed in Figure 21.

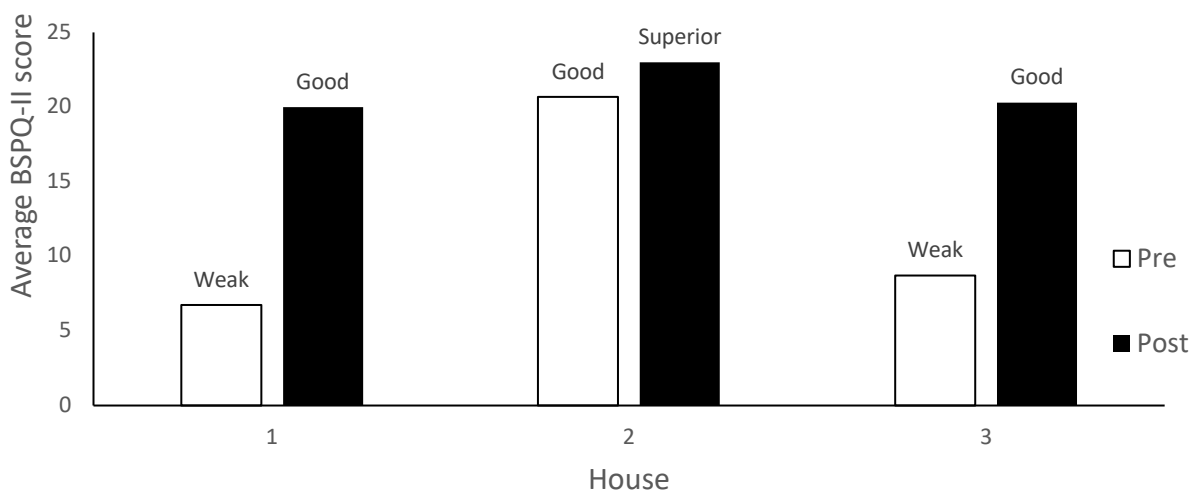


Figure 21: Comparison of average pre-consultation phase and post-consultation phase BSPQ-II scores across settings

Further analysis of the plans found that six plans were scored in the weak plan category, one plan was scored in the underdeveloped plan category, two plans were scored in the good plan category and one plan was scored in the superior plan category. With the exception of one plan (Alan) which achieved a near-maximum score (23/24) pre-consultation, ratings of all other plans improved post consultation; five plans were scored in the good plan category and five plans were scored in the superior plan category. Areas with the lowest scores in the pre-consultation ratings were *predictors relating to function of behaviour, replacement behaviours related to problem behaviours and communication*. These categories received a total of 7, 7, and 5 respectively out of a total possible score of 24. See Table 21 for a breakdown of ratings and scores per plan. A full breakdown of ratings and scores per category is available in Appendix Y.

Table 21: Behaviour plan quality ratings and scores

Service user plan	Pre-intervention rating	Post-intervention rating
Charlie	Weak (2)	Good (18)
Mark	Weak (9)	Good (21)
Steven	Weak (7)	Superior (22)
Maria	Weak (9)	Good (19)
Alan	Superior (23)	Superior (23)
Charlie	Good (19)	Superior (23)
Mary	Good (20)	Superior (23)
Robert	Weak (5)	Superior (22)
John	Under-developed (13)	Good (20)
Tom	Weak (8)	Good (19)

## 5.5 Discussion

The aim of this study was to determine if a systematic reorganisation of practice can improve procedural fidelity of implementation of behaviour support plans in front line residential services. This study expanded on the findings of the pilot study which showed BST combined with observation and feedback were able to improve procedural fidelity levels of implementation. The current study expanded on the pilot study in a number of ways. Firstly, a more robust experimental design was employed. The use of a nonconcurrent, multiple baseline across settings design enabled more confident conclusions to be reached about the relationship of the intervention package to changes in procedural fidelity levels. Secondly, a more comprehensive and holistic intervention package was developed to address the limitations identified in the pilot study. In addition to BST, improving quality of support plans and practice leadership training, self-monitoring and staff incentives were also included to realign staff motivations and place PBS interventions as a high priority in their day-to-day work. Thirdly, the current study expanded on the pilot study, by implementing the intervention across three

settings for people with moderate and severe intellectual disabilities and challenging behaviours that occurred at higher frequency with high rates of severity often reported. The pilot study was based in a home that followed the social model of disability with an emphasis on social care led practice. The current study was conducted in community-based homes which followed a medical model of disability and which had nursing led staff teams.

### ***5.5.1 Intervention package***

Given that findings of the systematic review and qualitative study suggested that a system wide, organisational approach was necessary to address challenges to implementing procedural fidelity with high fidelity, a comprehensive intervention package was designed to meet all of the identified issues. The analysis of the quality of PBS plans was valuable when identifying different areas where staff required support and coaching. The following section breaks down the findings from the behaviour support plan review and discusses how these were relevant to the larger intervention package. Seven of the original behaviour support plans were rated as weak or underdeveloped. The plans were missing key clinical and implementation elements from the organisation's own Positive Behaviour Support policy and BSP development guidelines, suggesting that the auditing of plans and internal inspection for quality is not standard practice. It is of note that these behaviour support plans had recently been rated by HIQA and approved, suggesting that the best practice guidelines for positive behaviour support plans in Ireland as set out by HIQA do not meet the criteria of evidence-based quality guidelines. The fact that the HIQA inspections do not highlight any missing elements from the plans, allows organisations to continue to produce sub-standard guidelines and plans unaware of the impact they might be having. It would be valuable for the governing bodies to review their criteria for high quality plans to encourage internal auditing and review of plans at a clinical level. Similar to this, it has also been identified as a problem in a number of settings

that governing bodies may not focus their observational inspections in the right direction, allowing vital aspects of care and support to be missed.

Two of the existing plans were rated as good plans and one was rated as superior. These three plans were all written by the same psychologist and carried out in the same house. Interestingly, baseline procedural fidelity levels for these three plans was observed to be slightly higher than those of the other behaviour support plans in the study. Further research into the effect of quality of support plan on procedural fidelity levels would be valuable. It would be important to explore whether a psychologist who writes better quality support plans also provides better quality training and ongoing support and monitoring. More information about the perceived quality and contextual fit of a plan and how that impact's staff willingness to implement the BSP would be useful.

The most commonly omitted elements of the support plans were related to functions of behaviour and replacement behaviours related to function. Few changes were made to the interventions involved in the plans, with the main change involving the provision of an explanation of why behaviours occur. It was beyond the scope of this thesis to determine if understanding the reasons for behaviour occurring, would have an impact on procedural fidelity levels. Further exploration into this area would be valuable for future study and understanding of how to motivate staff to engage in behaviour support plans. In order to develop any successful behaviour change process on an organisational level, people need to understand why it is necessary to make a change and what modifications need to be made to enable the change to occur successfully (Prochaska & DiClemente, 1983). Behavioural research has shown that punishment has little effect in changing behaviour for the long-term, with reinforcement being a much more valuable element. While tangible or social reinforcement is well established as a powerful tool to develop desirable behaviours, in a large organisation it is impossible to capture every instance of desired behaviour in the initial stages

and reinforce them accordingly. In order to develop motivation, staff should be provided with a clear explanation of the purpose of the plan they are implementing. Staff should also have a clear explanation of the underlying function of an individual's challenging behaviour to increase empathy and to raise awareness of how the staff's behaviour can reinforce the behaviours of concern. Within this study, regular consultation with staff, along with detailed behaviour skills training, allowed questions and concerns to be addressed quickly. This level of education and discussion about the recommended practices built a rapport between the clinician and frontline staff, improving future communication which is an essential component of effective PBS.

A focus on reducing behaviours of concern remained in this study, despite it being identified as a limitation in the pilot study with eight of the ten plans having a major focus on behaviour reduction. This was due to the fact that a number of the behaviours of concern were barriers to individuals engaging in more direct skills teaching. For example, one man was unable to transition to the bus or different activities without engaging in severe SIB. It was necessary to reduce the SIB, before he would be able to access more positive skills teaching in his home or the community. Skill teaching is a core component of PBS (Gore et al., 2013) and should be given equal priority and weight to behaviour reduction. In order to reframe the priorities for staff and frontline management, review meetings and feedback sessions should place equal time on the individual's achievements, rather than a focus on 'incidents' or challenging behaviour that had occurred in the previous period. Research into providing staff with more education to explain 'why' skill teaching is important would be valuable and would complement research previously suggested into educating staff about 'why' people engage in challenging behaviour.

Finally, similar to results found in the pilot study, staff co-ordination and communication were found to be low in the existing behaviour support plans. Communication



was the only area in which the superior plan did not receive full marks. This is a huge challenge for residential services due to the varied nature of shift work, the prioritization of different elements of the day and of different services users' needs over others. The use of a shift plan addressed this issue for most elements of the plan as staff were delegated different tasks etc. However, more subtle elements of plans such as tone of voice are harder to capture and share feedback about.

### ***5.5.2 Impact on procedural fidelity***

Levels of procedural fidelity of implementation of all behaviour support plans were found to increase following intervention across all settings. Levels remained higher than baseline throughout the intervention process. These findings are in line with much of the previous literature in the area. Coolican et al (2010) found that BST improved procedural fidelity levels and Brady et al's (2019) systematic review reported that observation, feedback and staff incentives were found to improve procedural fidelity. It should be noted that previous literature was focused on more discrete interventions, in more structured settings with children. The current research extends previous research to the use of complex behaviour support interventions with adults in residential care settings. Procedural fidelity levels for five of the plans in the current study immediately increased to above 70% following intervention, while procedural fidelity levels of the other five support plan grew steadily throughout the intervention process. All five of the plans which grew steadily had elements which required high response effort for staff to change. For example, Charlie's plan required the use of visuals for every transition, including those within the house going from room to room. While this could be taught in BST and mastery recorded during role-play sessions, this level of behaviour change for staff required ongoing feedback and coaching before they were able to implement it consistently. The organisation needed to have visuals in easy to reach and easy-to-use places was challenging for staff and there was an element of trial and error. The ongoing feedback

and discussion with frontline managers allowed the challenges and difficulties with this element of the support plan shaped so that the guidelines could be carried out successfully. This is, to an extent the purpose of the practice leadership and feedback. The opportunity to support and shape behaviour change must be ongoing. A number of elements of the behavior support plan, required learning and skill development from the staff, which cannot happen immediately and instead require coaching and prompting.

In contrast, implementation of Maria's plan jumped immediately from low levels of treatment integrity to 100% following intervention. The critical elements of Maria's plan were extremely tangible and easy to delegate to staff during BST and consultation stages. This style of behaviour support plan clearly lends itself to high fidelity as there is accountability for most elements and evidence of completion through a permanent product such as purchased groceries or a check-in stamp on the slimming world card. Clear directions and elements that could fit into the staff's usual daily routines ensured that Maria's support plan was carried out consistently. These findings indicate that additional factors may affect the likelihood of high fidelity of interventions. Variables such as the complexity of the intervention, time taken to implement different stages and the social acceptability of the intervention are likely to result in different levels of buy-in and consistency from staff. Maria's straightforward intervention, with easily delegated tasks and elements, was in stark contrast to Steven's plan. Steven, who engaged in attention-maintained SIB, had a BSP which required staff to change their behaviour entirely so that they would stop correcting him when he engaged in the behaviour and focus their interactions on positive behaviours and activities. While staff were able to perform this in BST, it took ongoing support, feedback and coaching for this skill to be displayed consistently in real life scenarios. This is in contrast to many BST studies which found generalisation occurred to new settings or people without further training or support (Morgan & Wine, 2018; Drifke, Tiger & Wierzba, 2017, Gormely, Healy, O'Sullivan, O'Reagan, Grey & Bracken

(2019). These studies were all conducted in more structured environments (schools and day services) which may have had an impact on the ability to generalize the skills across. Future research into the type of support and follow up particular interventions require in order to be consistently implemented with high fidelity would be extremely valuable for future practice.

### ***5.5.3 Impact on service user outcomes***

Nine out of ten participants experienced positive outcomes following the intervention in relation to the target behaviours that were the focus of their support plans. Nine out of ten service users displayed a reduction of behaviours of concern following the intervention. Six service users also had behaviours for increase as part of their support plans. Five of the six services users saw an increase in these target behaviours, enabling them to communicate more effectively or make better choices. will have a positive impact on service user outcomes (Vollmer et al., 2009). The one service user who did not demonstrate an increase in functional communication following intervention had his living situation reviewed as it was felt his current home may not be a therapeutic or appropriate learning environment for him. These findings are similar to previous research which suggests that increased levels of fidelity. A number of different outcomes were identified as a result of increased procedural fidelity for some of the service users. Details of these are discussed below.

**Improvements in procedural fidelity which led to positive behaviour change for the individual.** Maria's PBS plan aimed to teach her to make healthy choices around food and develop her independence in the community. The reason for this goal was that Maria was clinically obese and at high risk of diabetes. She made unhealthy choices with food and mealtimes were a major trigger point for challenging behaviour as staff would prevent her from accessing unhealthy foods or extra portions of food. Maria would also binge eat on any food in the kitchen, which regularly caused her to become unwell. The function of behaviour was identified to be access to tangibles, with attention from staff as a secondary function. The main

interventions in Maria's support plan were to attend Slimming World weekly, use a visual board each morning to plan her meals, do her own shopping once a week and store this food separately from the other service users, use a weekly schedule to plan her week and have 1:1 meaningful time with a staff member of her choice at least twice a day for a minimum of 30 minutes. Maria began to make healthy choices around her weekly menu, removing the meal-time trigger situation. Maria also had free access to healthy snacks which reduced her motivation to engage in bingeing behaviours in the kitchen. Finally, Maria had regular positive interactions with staff and so the motivation for engaging in behaviours of concern to access attention was removed. As a result of these behaviour changes, Maria was observed to lose 32lbs during the course of the intervention which had a direct impact on her health and her activity levels.

**Improvements in procedural fidelity which led to removal of restrictive elements of support.** Restrictive elements of Maria's support plan (such as supervised access to the kitchen and the local shop) were removed during the process as Maria was engaging in positive healthy choices and displaying new independence and self-care skills. As Maria's psychologist and GP were confident her weight loss was due to the behaviour support plan because of the procedural fidelity data, they were able to make informed decisions on how to remove restrictions and give Maria more autonomy in her life. It can be hypothesized from the historical information about Maria's life, that if this data was not available, restrictions may not have been removed for Maria and she would still continue to have to ask for permission to enter rooms within her own home or be unable to go for a short walk alone.

Similarly, Alan's PBS plan was extremely restrictive and had a major focus on locked doors, PRN guidelines and emergency protocols. The main behaviour focus was on reducing SIB, but was so restrictive as Alan's SIB was (historically) extremely distressing not only for Alan, but the other service users living in the house. When Alan engaged in SIB it would also

be accompanied by loud screaming, pacing and banging of objects and doors. There were also clear proactive strategies in place including how to communicate with Alan, what the environment should look like and methods to engage him in meaningful activity. In the baseline phase it was observed that Alan's level of challenging behaviour was relatively low compared to other service users in the home, and procedural fidelity levels were high across staff. Following intervention, the procedural fidelity levels increased further and Alan's behaviours of concern remained low. It became clear that Alan's history of frequent and severe challenging behaviour was a barrier to his progression in the community and towards more positive quality of life goals. A large number of restrictions remained in place, despite an absence of challenging behaviour. The data gathered was used by the frontline staff to argue that restrictions ought to be removed from Alan's PBS plan. As the procedural fidelity data and target behaviour data were clear and showed staff were supporting Alan effectively, locked doors were removed from the plan. A much more stringent set of requirements was also put in place with regards to PRN medication. Changes included the following: instead of 'physically guiding' Alan to a different area when he was distressed, a visual prompt was used to give him the choice to leave; requiring only one staff member to support him when out in the community (compared to two) and leaving the door to the 'quiet' area unlocked when Alan was in it. Previously the door would be locked for a minimum of 5 minutes and Alan would be observed through a window. It is important to note that the 'quiet' area was a large flat attached to the main house, with 4 or 5 rooms, with sensory equipment and rest facilities and also that staff monitored Alan at all times when he was there.

**Improvements in procedural fidelity with no improvement in service user behaviour, but opening opportunity for change in circumstances.** Steven displayed self-injurious behaviour at high levels in baseline. These behaviours of concern reduced briefly following intervention, but then increased to above baseline levels and remained high

throughout the intervention. Procedural fidelity levels of implementation were high throughout the intervention and no difference in implementation was observed at the point his behaviours began to increase again. The BSP was also rated as a superior plan. While this was challenging for staff and the service user to experience, the procedural fidelity data was extremely valuable as it enabled the staff to rule out variability in implementation as a factor in the increase in behaviour. Frontline staff, management and the clinician were empowered to advocate for more supports and input from other professionals including Steven's psychiatrist and the GP. These individuals ruled out possibility of mental or physical health issues, determining that the focus of intervention for Steven should be a change in environment. At the time of the final observation, the service user had been placed at the top of a list which the organisation maintains of those likely to benefit from having their own homes, where they would not have to manage living with other service users. These outcomes highlight the absolutely vital reason why procedural fidelity should be monitored and staff should be supported to ensure it is high. This data allowed clinicians to make informed decisions about altering a plan or person's living situation. While it is impossible to be certain what would have occurred if the procedural fidelity data was not available, it is possible that more restrictive elements would have been put in place, such as more medication or reducing access to areas in his own home or community.

#### ***5.5.4 Limitations***

The current study had a number of limitations. Due to organisational constraints and the small number of hours that could be dedicated to staff training, the behaviour skills training was brief in respect of each service user. While the amount of time allocated to each service user was increased from the pilot study (from 1 hour to 2 hours), much more detail could have been included in more extended training sessions that may have had an impact on outcomes. In further application of this approach, it would be unlikely that a clinician would be providing

training for multiple support plans in one session, so this limitation may be avoidable in applied practice.

Another difficulty in the study arose when there were difficulties with recruitment of one house, meaning that the design of the study was a non-concurrent baseline design. While this is a valid design, the impact of having two houses have an intervention occurring at the same time, while the third house intervention occurs at a different moment in time is unknown. As recruitment was delayed, data collection for the baseline phase of the third house occurred bi-weekly as opposed to weekly in the first two houses. Baseline data for the third house also occurred over the Christmas period, which is a time when there are few demands placed on service users and the culture and atmosphere is much more relaxed than during non-holiday season. There are threats to the internal validity of the study as a result of this design, as the researcher had influence over the point at which baseline ended and intervention began, so the possibility of unconsciously picking a 'good' time to intervene cannot be ruled out here. Another issue related to recruitment, is that the generalisation of the findings may be limited. This is due to the fact that the study was carried out in a medicalised setting which may be more conducive to the kinds of structures introduced in the intervention than residential care homes in the community run using a social model of disability. Also, it was striking how well qualified the staff were in this study with most holding higher qualifications than would be expected in social care services.

The lack of maintenance data gathered as a result of the COVID-19 lockdown, means that it is not possible to say that the effects of the intervention lasted. It would be essential for future research to gather this data to determine if the intervention can have a long-term impact. Another methodological limitation was the fact that the researcher was also the person leading the intervention. This could not be avoided due to lack of funding, but with any future funded

projects, it would be valuable to reduce possible bias by having these roles allocated to different people, ideally with observers' blind to the phase of data collection.

Another limitation was the fact that it is not possible to tell which part of the intervention package had the most impact. This was a similar finding to several to the studies identified in the systematic review (Chapter 2) and as such is a common challenge with complex interventions. It may be beneficial in future research to conduct a component analysis of the different parts of the intervention to determine the impact they have on procedural fidelity levels. Finally, much of the service user outcome data collection was gathered by frontline staff and its accuracy could not be corroborated. This was due to the levels of frequency of occurrence of the behaviours of concern, which could not be observed by the researcher regularly. To increase reliability for this data in future, more rigorous data collection training could be delivered by staff and an Inter Observer Agreement procedure set up within the staff team. While it was beyond the scope of the current study for these additional measures, IOA was ensured for the main dependent variable (i.e., procedural fidelity).

### **5.5.5 Summary**

This study has demonstrated that a collaborative and organisational approach to intervention can increase the procedural fidelity of interventions applied by front line staff. The combination of BST, practice leadership, staff incentives and self-monitoring are valuable for increasing procedural fidelity of implementation. The study also demonstrated that high fidelity can impact services users' quality of life in a number of ways. There was the expected direct impact of reducing behaviours of concern or increasing new skills, but a secondary outcome was the removal of restrictions that had been in place due to behaviour history. The value of having data to present to more senior members of the organisation was huge in that there was available evidence to prove the individual was coping well and did not need to have as many restraints in place. Another valuable outcome was that staff had evidence to highlight that



behaviour support was not sufficient for one individual. The documented data highlighting that staff were implementing the plans accurately, yet behaviours of concern were not reducing allowed staff successfully to advocate a change in environment. This is an extremely important outcome, as it has shown that high fidelity and ongoing monitoring, can be used to support positive decisions for a person's life.

## **Chapter 6: General Discussion**

### **6.1 Chapter overview**

This chapter will reflect on the systematic review and the three empirical studies conducted for this thesis. The chapter will begin with a summary of the results and the limitations of these will be discussed. The relevance of the findings for service users and frontline staff are explored. The chapter will then explore how these findings can be related to a broader model of behaviour change that can be applied to more extensive organisational practice. Essential elements to motivating staff to implement plans with high fidelity are then discussed.

### **6.2 Summary of results**

#### *6.2.1 Systematic review*

The initial systematic review was valuable for a number of reasons. The review highlighted that procedural fidelity can be improved in various contexts such as classrooms and clinical settings. Interventions such as feedback were shown to be effective, however challenges were found in determining how successful any individual intervention is at increasing procedural fidelity, as interventions tended to be delivered in packages. The review identified that there has been no published research into how to improve fidelity in adult residential services. All settings used in the studies were places that naturally had more structure such as laboratories, clinical offices and schools. This highlighted a major gap in research in this area as residential settings are, by nature, more unpredictable and unstructured settings. Another important outcome of the systematic review was that the majority of research that had been carried out, used children as the main client group with only 4.2% of the client group being adults. This was a surprising outcome considering the immense cost of providing behaviour support to adults with intellectual disabilities and challenging behaviour across the world. Finally, the review identified that the main practitioners involved in previous research

were frontline staff such as teachers or SNAs and primary caregivers such as parents. There was no exploration of the impact of clinicians' behaviour or that of management in schools or organisations. These gaps in the research justified the development of more studies in the area.

### *6.2.2. Qualitative Study*

As there was no previous research in adult residential services, a study to explore what factors may cause challenges or barriers to implementing behaviour support plans with high fidelity was developed. This was considered important given that strategies identified in clinic and school settings may have poor contextual fit within residential settings, which are by nature, more variable and unstructured. There may also be challenges in adult residential settings which adopt different strategies or approaches to those used in the more structured school and clinical settings. The qualitative study involved interviewing fifteen staff members who worked in residential services to gain insight into their perspectives on implementing support plans and any challenges they encounter. The study was novel in that it included three different types of staff members who are involved with positive behaviour support: frontline staff, frontline managers and psychologists. This was intended to address the limitation identified in the systematic review, that fidelity interventions had focused on frontline staff and ignored clinician and manager behaviour. The study provided some clear and consistent themes regarding the application of Positive Behaviour Support in residential services. Under the theme 'institutional culture' it was found that some aspects of the old institutions which were present in Ireland until the 1970s still remain. Issues such as a focus on restrictive practices like the use of medical restraints and locked doors were alarmingly prevalent in the interviews. A power struggle between clinicians and frontline staff, with an uncertainty about the organisational hierarchy caused a difficulty in communication. Finally, reports of individuals being placed in settings which were completely unsuitable for them highlighted a major barrier

to high fidelity of implementation as staff were demotivated because they felt that the provided environment was fundamentally unsuitable for the person and their needs.

An innovative aspect of this study was the inclusion of three different layers of staff in the interview process. It was valuable to hear the perspectives of all three sets of staff who were involved in developing, implementing and monitoring behaviour support plans. The amount of consistency across all layers of staff was noteworthy. Staff, clinicians and managers, mainly had the same experiences and understanding of what the environmental barriers and challenges to high fidelity of implementation were. This may suggest that the overarching organisational culture can support or impede implementation of support plans with high fidelity.

Concerning procedural fidelity, a striking finding was that none of the participants, regardless of job title or educational background, knew what it was, indicating that it is not a primary focus of behaviour intervention in such settings. The unfamiliarity with the term is in direct contrast with research settings where procedural fidelity is seen as a quality indicator for intervention-based studies, but even in research, it is often overlooked when it comes to actually measuring it. Further research into the understanding of procedural fidelity with a larger sample size would be valuable to ascertain a clearer picture of its importance in applied settings. Another theme identified was ‘accountability and lack of understanding of procedural fidelity.’ This theme highlighted the challenge faced by clinicians and frontline staff regarding monitoring implementation as there were no clear guidelines as to who was responsible. While it would seem logical that the person who wrote the plan should be involved in monitoring it, clinicians report being stretched with their caseload, and time to monitor things when they are ‘going well’ simply is not there.

The study also exposed some serious challenges concerning PBS delivery in services across Dublin under the theme ‘theory versus practice’. Some apparent inconsistencies in communication and practice highlight that the label PBS may be being used for practice that

does not meet PBS requirements. Several aspects of the PBS Competency Framework (PBS Academy, 2015) were noted by staff to be underdeveloped or poorly executed. These include areas such as data collection, supporting communication, commitment to behaviour skills training, establishing clear roles and teamwork and monitoring procedural fidelity. Supporting clinicians and frontline workers to focus on these essential features of support should be a priority to ensure the successful implementation of plans. Finally, a theme ‘there’s nothing positive about behaviour support’ highlighted the challenges that frontline staff face to remain motivated and enthusiastic about the plans they are required to implement. Difficulties with seeing a lack of progress for the people they support and only receiving feedback in a crisis reinforces the perception that the work they do is negative or aversive. This study set out to explore the issues confronting staff, managers and clinicians in residential settings for adults with intellectual disabilities so that an intervention could be tailored towards these issues.

### *6.2.3 Pilot study- testing feasibility of organisational intervention to improve procedural fidelity*

Accordingly, an initial pilot study was conducted which involved reviewing of behaviour support plans (to address accountability and ease of implementation), implementing behaviour skills training (to address the understanding and knowledge of frontline staff), and observation and feedback (to ensure generalisation of skills to the applied setting). The findings from the pilot study were promising in that an apparent increase in procedural fidelity could be observed across all three behaviour support plans following the introduction of behaviour skills training. A further rise in procedural fidelity levels was observed following the introduction of observation and feedback sessions with the house manager. It was also observed in the two data sets collected to monitor levels of service user challenging behaviour that plans with increased levels of procedural fidelity also had data reflecting lower levels of challenging behaviour. The procedural fidelity levels remained above baseline for two of the

behaviour support plans in the maintenance stage, and challenging behaviour levels for two service users remained below baseline levels. An organisational decision to change the house manager's job had an immediate impact on the staff, their ability to follow through on the intervention and the opportunities for observation and feedback. These findings and limitations were extremely valuable in designing the main study. The pilot study demonstrated the feasibility of the implementation of these procedures and their likely benefits. A more robust design was then developed for the main study.

#### *6.2.4. Main study- experimental evaluation of an organisational intervention to improve procedural fidelity*

The main study implemented behaviour skills training, practice leadership, self-monitoring, staff incentives and BSP quality review. The results from the main study are consistent with the initial findings observed in the pilot study, in that they show an increase in procedural fidelity across all behaviour support plans and settings immediately or in the course of 2-3 observation sessions following the introduction of the intervention package. In addition, the multiple baseline design provides greater experimental control to increase the believability of the outcomes obtained. The service user outcomes displayed apparent improvement for quality of life factors, with nine out of ten service users showing an improvement in levels of their target behaviours. The one service user who did not display a reduction in challenging behaviour levels did experience indirect benefits in that the procedural fidelity data confirmed his BSP was not meeting his needs, leading to a different approach to his support being recommended. This study successfully addressed many of the challenges identified by staff in the qualitative study such as people being supported in the wrong environment, feedback only being delivered in a crisis and a lack of accountability for ensuring high fidelity of implementation. Overall, the thesis shows that procedural fidelity is both important and poorly understood in residential settings. Interventions to improve fidelity are possible and may well

lead to better outcomes for individuals in terms of reduced challenging behaviour and improved quality of life.

#### *6.2.5 Strengths and Limitations of research*

The following section will reflect on the strengths and limitations of the thesis in relation to the internal and external validity of the studies. Internal validity refers to the extent to which a design can provide empirical evidence to test the cause-and-effect relationship between an independent variable and a dependent variable (Campbell & Stanley, 1963). External validity refers to the how well the outcome of a study can be expected to apply to other settings (Campbell & Stanley, 1963). A number of elements of the studies improved internal validity such as the use of consistent data collection and observation methods throughout the pilot and main study, which was done to ensure changes observed at observation points were not a result of a new data collection method or new observer. Maturation was another area monitored for internal validity. In order to avoid changes in participant behaviour which may be caused by the passage of time or a change in their physical or mental state, time between baseline and intervention was kept to a minimum in the main and pilot studies. A threat to internal validity was apparent in the pilot study as staff were under pressure due to a change in their manager. This threat was managed as far as possible by delaying the final element of the intervention (observation and feedback) until a new manager was put in place and staff were back to a normal routine.

Another identified limitation of the pilot and main study were the designs used for both. The A-B design of the pilot study is not experimentally robust, so the results from this study must be treated with caution. It was determined at the time, that this limitation was acceptable as the pilot study was simply being used to gain information to develop the stronger, more robust main study. In the main study, it was necessary to use the non-concurrent multiple baseline design, due to challenges with recruitment. While this is a valid experimental design

(Harvey, May & Kennedy, 2004), the more robust concurrent, multiple baseline design would have strengthened the validity of the outcomes. Finally, in relation to the internal validity of the pilot and main studies, the package of interventions used in each study makes it difficult to disentangle and determine which part had the biggest impact on fidelity levels. It is also impossible to be sure that all interventions contributed to the changes in fidelity levels. However, the results of the systematic review (Chapter 2) and qualitative study (chapter 3) indicated that a package of interventions would be necessary and so this approach was deemed appropriate.

In relation to external validity of the studies in the thesis, strengths can be seen in relation to the different types of organisational contexts used. Participants in the qualitative study (chapter 3) were employed in community settings and high support settings. The pilot study (chapter 4) was conducted in a medium support community home while the main study (chapter 5) was conducted in a high support residential home that was run using a medical model. These different contexts would suggest there is a level of generalizability that could be further explored. Threats to external validity also were identified in relation to recruitment of participants. In the qualitative study, convenience sampling was used. Participants were selected when managers replied to an email sent out by the researcher. The email was sent out to several organisations and the first five that responded were included in the study. This may not be an accurate representation of the general population as the managers and their teams who responded may be more actively interested in changing practices within organisations than people who did not respond and may have different thoughts and opinions than those who chose not to respond. Within the pilot and main studies quota sampling was used for selection of the participants. This ensured that that the participants selected were representative of the population studied. However, due to the resources allocated to the project, the numbers of participants in the empirical studies were relatively small which may have led to selection bias.



A larger group study would allow for more exploration into the feasibility of utilizing the interventions on a broader scale and would also provide the opportunity for more detailed analysis of outcomes using statistical measurement.

Secondly, the studies were all carried out within a small number of organisations in the greater Dublin area. This poses a problem for generalising the findings and the external validity of the study to different sorts of residential settings in other countries as sample bias may have occurred. Replication of the current study in different geographical areas and other residential settings would allow for more discussion of generalisation and usability of the interventions in other settings and would improve the external validity of the study. Another challenge to external validity was the level of qualification of all participants who took part. The participants overall, had a high level of education with most having a minimum of a bachelor's degree. This level of education would be considered unusual for frontline workers in human service organisations and the results may not be relatable to another sample population.

Finally, the main study was unable to address one major challenge which was identified in the qualitative study. This was the influence of outside governing bodies and broader organisational culture. The interventions chosen for this research were limited to those which were under the researcher's control and it is likely that there may be a broader range of interventions such as professional training, policy making and law that might also have an impact on fidelity.

### **6.3 Implications for practice**

The findings from the thesis are significant for a number of reasons. Implications for practice will be considered in relation to different stakeholders and areas of the behaviour support process, starting with individual service users.

### *6.3.1 Relevance for service users*

It has been well documented that high fidelity of implementation increases the likelihood that a support plan will reduce challenging behaviour or result in new skill development (Volmer et al., 1999; Wilder et al., 2006). This would thereby create opportunities for individuals to experience a better quality of life. Indeed, this was observed in Maria's case. As she learned to manage her eating habits better, she experienced more independence and opportunities to meet a wider group of people. This illustrates the importance of supporting staff to focus not only on the challenging behaviours displayed, but also on the promotion of skill building and life goals. Unfortunately for individuals with challenging behaviours, these goals can often be overshadowed by the behaviour management targets, and review meetings can often focus solely on the negative aspects of a person's day. Ongoing observations and feedback sessions with managers will likely help to keep the more positive life goals developed through the individual's Person-Centered Plan at the forefront of practice and effort by staff.

Vollmer et al (2008) highlighted the dangers of 'assuming' that levels of procedural fidelity were high. Staff teams may raise objections to intensive procedural fidelity data collection for reasons such as it feels like running an experiment, rather than a residential home (Vollmer et al, 2008) or there simply is not enough time or resources to complete the required steps or tasks. Vollmer et al. (2008) argue that this is potentially dangerous for several reasons. These include life-changing decisions being made based on assumptions that interventions are being carried out as described. These decisions may include a change of residential placement, increased medication, use of restrictive practices or increased staffing. The intervention package in the final study addressed the concerns staff may have about data collection, by including it into common everyday practices, such as daily notes and shift planners. Incorporating ongoing procedural fidelity data collection in staff daily practice may provide

clinicians and managers with more sound data to aid in the clinical decisions that are made for people who engage in challenging behaviour.

Further to this, a key challenge for individuals with intellectual disabilities and challenging behaviour that has arisen many times in history is their vulnerability to systemic psychological, physical and financial abuse (Sobsey & Varnhagen, 1988; Crossmaker, 1991). The Winterbourne and Aras Attracta scandals highlighted how easily staff could misconstrue or deliberately ignore support guidelines to use restraint and verbal abuse in response to service user challenging behaviour. These scandals highlighted how organisational culture and ineffective management hierarchies could contribute to individuals standing by and observing as colleagues engage in abusive practices openly and apparently without fear of reproach. The current study has displayed that educating frontline staff about the reasons why support plans are in place and their importance, coupled with ongoing feedback and support makes it more likely they will follow the best practice guidelines. Greater practice leadership may lead to more accountability and oversight of what is happening in the daily running of behaviour support plans. Coupled with this, promoting peer feedback and support allow staff to raise concerns or issues they have with colleagues' practice safely and practically, which will likely have an impact on the occurrence of abusive practices, ensuring a better quality of life for service users. The development of effective behaviour support, that is actually implemented, will give staff a set of effective responses to use as a means to prevent challenging behaviour and to use when it occurs. It could be reasoned that these behaviours could replace some of the more restrictive and abusive responses that otherwise may be more likely to happen.

Another critical area for improvement for service users is the increased strength staff will have when advocating change for individuals with challenging behaviours when they can present fidelity data as evidence that guidelines have been in place. In the qualitative study in Chapter 3, participants discussed how there is little progress noted with individuals, and plans

may be in place for years with little change. They also discussed how some people are simply in the wrong environment as they may not be able to cope with the number of people or do not like the people who live with them. Gathering procedural fidelity data which can be used to evidence that the guidelines were in place and presenting this alongside challenging behaviour data which shows little or no improvement, will potentially allow staff to advocate more dramatic and immediate changes to an individual's environment. This advocating tool is a crucial aspect of procedural fidelity monitoring, and one which Vollmer et al (2006) noted is often overlooked. The benefits of the evidence of implementation for the service users' quality of life should be highlighted to staff at the onset of consultations.

### *6.3.2 Relevance for frontline staff and managers*

Feedback from staff and managers through the SESQ and other questionnaires, highlighted the improvement in staff knowledge, confidence and ability to perform their jobs to a high standard as a result of the initial BST and ongoing practice leadership sessions. Continuing professional development is often an essential part of maintaining registration or certification for many professions. In Ireland, social care workers and care assistants do not have to register with any regulatory body. There is no onus to keep up with current practice other than an individual's interest and motivation. Organisations often make a priority of providing training for more health and safety-based areas such as manual handling, medication management, fire safety etc. Positive behaviour support training in the organisation the research took place in was provided to staff in their induction week and was not revisited later in staff contracts. These findings suggest that organisations would benefit from providing ongoing support that keeps frontline staff and managers focused on best practice and current standards of care. The pilot study and main study both found that training followed by ongoing support and feedback showed an increase in staff motivation and ability to follow through on supports.

A challenge highlighted in the qualitative study (Chapter 3) was that feedback tended to be given to staff only in a crisis. This timing of feedback had an impact on morale, perspectives of the individuals with challenging behaviour and a negative pattern of communication that did not lend well to asking for support or querying areas of plans that should be adapted. By providing ongoing support and feedback, staff will be able to continue to learn and question elements of the support plan, empowering them and increasing their motivation to adhere to guidelines pending a review (Coolican et al 2010). An essential aspect of the PBS competency Framework (PBS Academy, 2015) is that the PBS plans are ‘live documents.’ The ongoing communication between frontline staff and their managers allows this to be put into practice. Protocols can be adapted in real-time rather than waiting for a six monthly or annual review, by which time bad habits and inconsistencies may have retaken hold.

Finally, having plans that are actually implemented is likely to also have an impact on staff motivation across the entire team. When plans are implemented properly and actually working, frontline staff, managers and clinicians can see progress and feel motivated by their jobs. When not implemented properly, clinicians writing plans are wasting their time and losing motivation, managers are continually dealing with crises that might have been averted by proper implementation and staff are left feeling that no one understands their situation and there is no point in doing the things their bosses tell them to.

### *6.3.3 Relevance for organisations*

A major benefit for organisations to consider when placing focus on the procedural fidelity of an intervention is the economic benefits. The costs of developing a behaviour support plan can be large when one reflects on the man-hours required for observations, write up and training from specialized psychologists or behaviour analysts. Monitoring the follow-

through of this expensive process and ensuring the product purchased is what the client receives is important to ensure value for money. If the monitoring of the procedural fidelity levels does not occur, it is likely that the organisation will have to dedicate more man hours to the same process as the behaviours will not have changed, improved or may have even worsened.

A second benefit to organisations is the increased level of support provided to staff with the practice leadership model. Staff turnover and burnout leading to illness present a major challenge for human service organisations . This model aims to combat the stresses and challenges that staff come up against in residential services and problem solve the issues as they happen. The outcome questionnaires from the staff displayed an increase in job satisfaction levels following the intervention and introduction of Practice Leadership. The proposed model also includes team incentives to build morale and momentum for the implementation of supports. However, this will likely affect the culture and mood of the services ensuring best practice is in place and poor practice is called out and corrected as it happens.

Finally, from an organisational perspective, service user outcomes in the form of quality of life goals are important, not only for the service user, but also as they are a requirement for HIQA inspections. The SESQ questionnaire completed by staff showed that staff's focus moved from 'caring' statements for service users towards their job being about providing opportunities to provide quality of life. This switch was particularly prominent in the nursing led environments where only one staff member initially reported quality of life targets. These outcomes will be beneficial for future practice as organisations strive to change the culture of practice from a more medical model towards a social model of disability, in line with government policy and quality of life targets.

#### *6.3.4 Relevance for broader service system for individuals with intellectual disability*

As highlighted in Chapter 2, the global costs of supporting individuals with intellectual disabilities and challenging behaviours are huge. Moescheler (2013) estimated that to support an individual with intellectual disabilities without any additional challenging behaviour needs over their lifetime would cost an average of \$1 million in the United States of America. Overall cost to support individuals with a diagnosis of ID and challenging behaviour in the UK is estimated to be £557 million per year (NAO, 2015). It is also reported that almost half (49%) of the budget for supporting adults with intellectual disabilities in residential services in Ireland is allocated to those people who display challenging behaviour (HSE, 2009). This is despite the fact they make up only 18% of the population of people with ID. It can be speculated here that an increase in procedural fidelity levels, which results in more successful behaviour support plans and reduced challenging behaviours, would likely have an impact on the amount of money it would require to support these individuals. An increase in accountability and monitoring of supports would be expected to have an impact on how money is distributed in services, making a fairer system with more equally funded services. Higher fidelity levels achieved through increased staff training, better communication and more staff motivation would be expected to reduce the need for some of the service settings where problems are most likely to arise such as treatment units and institutional settings. It would be beneficial to conduct a cost/benefit analysis in the future to determine the impact these strategies can have on the funding required to support the services and individuals with challenging behaviours. It is likely that improved procedural fidelity levels will reduce challenging behaviour (Vollmer et al., 2008) and impact staff motivation, reducing burnout and staff turnover. This would have implications for service delivery and costs as training and recruitment budgets would be lower. It is also important to note that it is unlikely that the introduction of these strategies in

organisations will increase costs in any significant way as the aim is to embed them within existing practices and resources.

#### **6.4 Theoretical implications – understanding how to increase fidelity**

The intervention proposed in Chapter 5 is an organisational and collaborative approach, which can be adapted to work within different organisations in a system-wide manner. The key outcome of the intervention was an improvement in procedural fidelity levels of implementation across all staff. This outcome required an evident change in behaviour, practice and focus for the frontline staff and managers in the services. Supporting such changes efficiently requires that we have a clear understanding of the contextual influences on current behaviours, practices and foci. Such an understanding might be enhanced by applying existing methods of Functional behaviour assessment (FBA). FBA is, of course, standard practice in the fields of Applied Behaviour Analysis and Positive Behaviour Support when attempting to develop interventions for behaviour change (Cooper et al., 2014). The methodology of FBA involves two methods of information gathering to isolate behaviour-environment relationships in order to inform decisions about intervention. Firstly, *indirect* methods involve informant questionnaires, checklists and semi structured interview protocols (Fienup, Luiselli, Joy, Smyth & Stein, 2013). Such methods were employed in the studies reported above to gather information that would enhance understanding of current contingencies and guide change. The O'Neill et al. (1997) semi structured interview was employed during the consultation with all staff, staff answered questionnaires relating to their workplace (SESQ) and a checklist (BIP QE-11) was used to review all support plans. Secondly, FBA uses *direct methods* which typically involve observing behaviour in real life settings. Similarly, in the studies in this thesis, observational data was gathered during baseline, to inform decisions about the best interventions to support staff to implement plans with high fidelity.



FBA is used extensively with children and adults with ASD and intellectual disabilities (Reed & Azulay, 2011) and the effects of the interventions developed through FBA have been empirically demonstrated across studies (Wood, Oakes, Fettig & Lane, 2015). There are also some examples of the successful application of FBA in the area of Organisational Behaviour Management (OBM), although these are much fewer in number. One example is work developed by Austin, Weatherly and Gravina (2005) which used informant-based functional assessment (employees completed performance checklists) to evaluate closing-task completion of restaurant servers and dishwashers at a privately-owned restaurant. The results of the FBA indicated that staff were unaware of the tasks involved in closing the restaurant and that there were few, if any, consequences for task completion. The researchers developed an intervention which consisted of a combination of task checklists, verbal feedback from supervisors and posted group performance data. This intervention was found to effectively increase the task completion of both the dishwashers and the servers.

Another example of FBA being employed in an organisational setting is the research conducted by Fienup et al. (2013), which was carried out in a human service setting. Fienup et al., (2013) aimed to use FBA to develop an intervention to improve timeliness of staff meetings within the organisation. An FBA was conducted by observing staff meetings, conducting semi structured interviews and gathering information from participants through self-report questionnaires. The FBA highlighted that a number of factors may contribute to staff tardiness such as no consequences for being on time or late and poorly scheduled meeting times resulting in bathroom breaks causing the next meeting to start late. An intervention was developed to address both the antecedent and consequent factors contributing to the behaviour. This involved scheduling time for bathroom breaks between meetings, having a clear time-bound agenda in place for each meeting and entering staff who arrived on time for meetings into a monthly draw to win \$25. The more frequently staff were on time, the more opportunities they

had to win the prize. As a result of the intervention, the number of minutes late that meetings started decreased.

In the pilot study and main study of this thesis, the indirect and direct methods of gathering information about staff behaviour identified a number of contributing factors to low fidelity levels. These included staff motivation to engage in particular behaviours, ease of implementation, level of understanding of what was required to implement plans accurately, lack of feedback from managers and supervisors regarding staff implementation levels and the culture of the staff team. These can perhaps be usefully conceptualized in terms of the sets of variables investigated in FBA within the 4-term contingency (Michael, 2004). The following section draws on experience of the studies carried out in this thesis to propose a conceptual model of fidelity improvement within residential social care settings. It is suggested that improvements in fidelity require attention to: **motivating operations** (MO) that influence adherence to PBS guidelines, **antecedent** strategies that ensure that it is clear what staff are expected to do, training to ensure that the specific **behaviours** required of staff are available within their repertoires, and **consequence** strategies including incentives and managerial feedback that provide reinforcement for faithful implementation. It seems likely that this 4-term contingency model will, itself, need maintaining within an overarching organisational culture of supportive leadership.

#### *6.4.1 Increasing motivating operations to follow PBS guidelines*

Motivating operations (MO) refer to environmental variables that temporarily alter the effectiveness of a stimulus, object or event as a reinforcer and alter the current frequency of all behaviour that has been reinforced by that stimulus, object or event (Laraway, Snyderski, Michael & Poling, 2003). Motivating operations can be categorised into two defining effects. The first, *establishing operations (EO)*, refer to environmental variables that *increase* the current effectiveness of some stimulus, object or event as a reinforcer, and increase the

frequency of behaviours associated with those reinforcers. The second, *abolishing operations* (AO), refer to environmental variables that *decrease* the current effectiveness of some stimulus, object or event as a reinforcer, and decrease the frequency of behaviours associated with those reinforcers. In both the pilot study and main study, it was observed that staff were highly motivated to engage in behaviours related to HIQA inspection guidelines and would prioritise these over key elements of the behaviour support plan if required. It was hypothesised that this behaviour was maintained by avoidance of disciplinary action from management and HIQA inspectors. These environmental variables (i.e., the threat of potential HIQA inspections and associated disciplinary action) can be considered to act as establishing operations, which increase the value of the reinforcer (i.e., avoidance of negative consequences), as well as increasing the likelihood that staff will continue to engage in the HIQA-related behaviours.

In contrast, staff reported that they receive little or no feedback in relation to BSP implementation unless something has gone wrong. It was also reported that training can be inconsistent and carried out in a manner that does not increase the staff members skill set. Immediate positive consequences for implementation of guidelines are rare as behaviour change can take a long time and staff may be faced with aversive consequences such as engaging in a task they are unfamiliar with (e.g., skills teaching, data collection, fading prompts) as a result of high fidelity of implementation. These environmental variables ( e.g., aversive aspects of BSP implementation) are likely to act as abolishing operations for adhering to BSP implementation, decreasing the value of the (often delayed) reinforcer, and reducing the likelihood that staff will engage in BSP-related behaviours.

Staff should also have a clear understanding of the underlying function of an individual's challenging behaviour to increase empathy and to raise awareness of how the staff's behaviour can reinforce the behaviours of concern. Within the main study, regular consultation with staff along with detailed behaviour skills training allowed questions and

concerns to be addressed quickly. This level of education and discussion about the recommended practices built a rapport between the clinician and frontline staff, improving future communication, which is an essential component of effective PBS. Similar to LaVigna et al.'s (1994), guidelines to educate staff about the purpose of the PSR system, staff in all studies were given training in procedural fidelity. This included information about what it is, why it is important and what can happen if it is not high. This development of knowledge and skills with staff, was valuable in increasing the likelihood for buy in to the intervention and also to increase motivation to follow through when unsupervised.

#### *6.4.2 Antecedent Interventions*

##### **Ease of implementation: reducing response effort**

Antecedent interventions are applied with the outcome of minimizing the likelihood that challenging behaviours will occur (Luiselli, 2006) They are considered to be proactive and preventative and can reduce or completely remove the need for consequential procedures (Kern, Choutka & Sokol, 2002). Antecedent interventions typically involve some sort of environmental manipulation such as the introduction of prompts or removal of aversive stimuli. Antecedent interventions often involve the introduction of a discriminative stimulus ( $S^D$ ). These are events or variables that signal the availability of reinforcement for a particular behaviour. Behaviours that occur in the presence of an  $S^D$  are reinforced, making them more likely to occur in the presence of that stimulus in future (Kern et al., 2002). An example of an  $S^D$  in a real-life setting would be the presence of the colours red and blue on sink taps. If you wanted to wash your hands and needed hot water, the  $S^D$  would be the colour red on the tap as this would lead to the delivery of reinforcement (i.e., hot water). If you wanted a drink of water and needed cold water, the  $S^D$  would be the colour blue on the tap, as this would lead to the delivery of reinforcement (i.e., cold water).

The research carried out across four different settings highlighted how busy and challenging frontline services can be. It is essential for high fidelity of a plan that the plan can be carried out at the busiest time in the house as well as when things are calm and quiet. Damschroder et al., (2009) discuss this necessity in terms of 'contextual fit' and states that when the fit between the intervention and setting is poor, the likelihood of effective implementation diminishes. During the studies in the houses, observations and data gathering were carried out during the busiest times which were typically around meal times and morning and afternoon when service users were leaving and returning to the house from day services. A common challenge to the high fidelity of plans was setting up the resources required. For example, several support plans required visual supports for communication with service users. The staff found it difficult due to time constraints, access to the internet and inadequate technology to make these resources themselves. This challenge was resolved quickly by designating responsibility of developing visual supports to the clinical team, and a line of communication was opened for when more visual supports were required. This simple intervention, created an Sd (i.e., visual supports) and immediately reduced the response effort required for the staff to engage with the materials needed for the support plan. Visual supports acted as an SD in that staff who used these supports received positive reinforcement from their manager through observation and feedback for doing so, and also from the service user when they engaged with the support without engaging in challenging behaviour.

LaVigna et al. (1994) highlight preparation of materials as an essential element to success for the PSR system. They recommend that the datasheets, resources and other permanent products are developed in advance of beginning the intervention and that these be prepared by the person who designs the system. Similarly, Binder (1998) highlighted the need for 'tools and resources.' This covered quite a broad range of things including data sheets, funding, transport, adequate staff and environmental factors such as heat and lighting. Binder

(1998) discussed the point that staff cannot be expected to perform to their best ability if the tools required are not available. An example of a required task may be hanging a picture on a wall. If the behaviour is hammering a nail into the wall for the picture, it is much more likely to happen if a hammer is available. Therefore, the hammer is correlated with the reinforcement arising from hammering a nail and successfully hanging the picture.

This provision of tools and resources is an essential element of PBS and should be promoted in training and ongoing coaching sessions. During the qualitative study (Chapter 3) one clinician revealed that her PBS team will not begin to develop an intervention for an individual, until the environmental circumstances have been deemed appropriate. The clinician explained that this simply makes implementing the final plan much easier as staff do not have to contend with unforeseen variables and circumstances as regularly.

Another method identified during the studies that can support staff in beginning the implementation of support plans is to provide simple scripts of what to say in certain situations with different service users. Providing the language needed can reduce the response effort which makes it easier for staff to engage in the desired behaviour and can ensure consistency of approach. Finally, support plans must be written simply and in a straightforward manner to ensure staff will be able to retain as much of the information as possible. In many of the houses where people are supported, staff are also having to work with physiotherapy guidelines, epilepsy management plans, feeding protocols, medication guidelines and nutritionist recommendations, to name a few. To be able to ensure follow-through and adherence to supports, practitioners should adapt their guidelines to be written in a manner that is easily accessed by all staff working in the home. The studies conducted highlighted the importance of ensuring that response effort for staff is reduced and interventions are not too complex when they are designed. It is also essential that appropriate resources and supports are in place for

staff to ensure it is possible to follow the plans guidelines at all times of day and in any environment they individual service user may be.

### **Training the specific behaviours required**

In order to develop any successful behaviour change process on an organisational level, people need to understand why it is necessary to make a change and how to make the change successfully. A key challenge identified in the consultation phase of the studies was that staff did not have a clear understanding of why they were engaging in the plans, how to do them and the importance of high fidelity for long-term success which is likely to have a major impact on the level of motivation to engage in the tasks. Binder's (1998) 'Six-boxes' Model © included 'skills and knowledge' as an essential element for influencing behaviour change. When discussing skills and knowledge, Binder (1998) refers to training interventions and ongoing coaching and support that is made available to staff teams or groups during their working lives. This training and coaching may refer to general training or specific, on the spot feedback and consultations which further the staff member's skill etc. Similarly, the PSR (LaVigna et al., 1994) advocates educating staff about the philosophy and objectives behind the PSR system. The PSR guidelines describe how, if individuals do not fully understand the reasons why a new system or behaviour should be implemented, they are more likely to avoid this and stick with what is familiar (LaVigna et al., 1994).

Following from this, behaviour skills training (BST) was employed in this study to train staff how to implement the plans, using practical approaches rather than the table-based discussions that had been used historically within the organisation. BST has a large evidence base displaying success in training a number of different skill sets to different populations such as parents (Coolican et al., 2010), teachers (Flynn & Lo, 2016) and frontline staff in intellectual disability services (Gormley et al., 2019). This approach is extremely beneficial for behaviour change as it provides explicit standards and criteria that staff should aim for to be delivering

the guidelines correctly. Staff are given clear direction about what they ‘should do.’ A challenge that punitive consequences (which were previously in place within the organisation) pose for long-term behaviour change, is that no alternative appropriate or desired behaviours are offered (Lukowiak & Bridges, 2010). Individuals simply learn what not to do, but do not receive any instruction of what they should do instead. Behavioural skills training addresses this challenge directly and encourages discussion and practice to achieve targets.

#### *6.4.3 Intervention to address the balance of consequences*

Consequences refer to a stimulus change that occurs following a behaviour of interest (Cooper et al., 2014). Consequences are likely to be more effective when they are delivered quickly following the behaviour and are relevant to the individual’s current motivations. It was identified in the pilot study that staff were more likely to engage in behaviours and tasks related to HIQA regulations, than tasks related to PBS guidelines. It was speculated that this may be as consequences were firmly in place in relation to the HIQA tasks, while there were no meaningful consequences apparent for frontline staff to engage in the PBS guidelines. This hypothesis is supported by the ‘Matching Law’ which suggests that when different schedules of reinforcement are available at the same time for different behaviours, people will allocate their behaviour according to the relative rates of reinforcement available for each option (Cooper et al., 2014). These findings suggest that in order to achieve an increase in motivation to implement PBS guidelines with high fidelity, the balance of consequences for staff for both sets of behaviours must be addressed to make support plan implementation equally, or more, motivating to engage in. For real, long-term organisational change, this balance and other key areas must also be addressed.

As mentioned previously, the FBA in both the pilot study and main study identified that there were no real consequences in place for implementing the behaviour support plans with high or low fidelity. While the qualitative study suggested that there may be punitive



consequences for anyone who did not follow through, in practice there was no evidence of this. Support plan implementation was not monitored and supervision focused on more general activities and tasks which occurred in the house. This was in direct contrast to the competing HIQA related tasks which were well documented and monitored not only by frontline management, but higher managers and a governing body. Staff responsibility for all HIQA related tasks was clearly delegated at the beginning of each shift so that follow up and accountability could be achieved. The previously mentioned matching law would suggest that as a result staff will naturally prioritise the behaviour which provides more reinforcement. In order to address this, an intervention which can balance the consequences of engaging in both sets of behaviours is required.

### **Group incentives and observation and feedback**

While the consequences placed on staff for not engaging in HIQA related activities or tasks tended to be punitive (e.g. warnings from management, threat of closure of house if files not up-to-date), behavioural research in general has shown that punishment has little effect in changing behaviour for the long-term, with behaviour changes resulting from punishment often being temporary (Skinner, 1971). When punitive consequences are removed, or the discriminative stimulus (SD) for punishment (such as HIQA regulations and inspections) is not present, the punished behaviour is likely to reappear. This would suggest that if HIQA inspections were suddenly removed, staff may stop completing twice daily fridge temperature checks and recording every time they clean communal areas. It is a reasonable assumption that this may be the case, particularly when reflecting on the challenges that staff discussed in the qualitative study (chapter 3) relating to the huge amount of paperwork that the HIQA regulations create in their working lives. In the qualitative study, it was highlighted that punitive consequences were currently in place in a number of organisations across Ireland as a method to ensure staff implement plans correctly, which led to negative associations with PBS

plans and implementation for staff. In light of these findings, developing more reinforcing interventions with staff may increase motivation to engage in implementing plans with high fidelity and change both staff and service user behaviour for the long-term. For instance, in the main study reported in Chapter 5, one element of intervention was the inclusion of the group incentive which added a positive and motivating reason to engage in the plan. No such intervention was in place regarding the competing HIQA tasks so this helped to balance the priorities of staff between administration tasks and practical PBS supports. The second intervention was the inclusion of observation and feedback from the frontline manager on an ongoing basis using Practice leadership principles. A vital aspect of practice leadership is the modelling of behaviour that frontline managers display to educate and train staff (Beadle-Brown et al., 2015). The presence of frontline, ‘on the floor’ practice is likely to be successful at improving implementation behaviours in frontline staff as rather than receiving feedback at a meeting (usually after something had gone wrong), staff would receive on the spot feedback and support. Ensuring that these combination of consequences are in place will increase the likelihood that the desired behaviours (implementation of plans with high fidelity) will occur in the future.

#### *6.4.4 Providing supportive leadership*

Binder (1998) views managers and leaders as an essential part of behaviour change and developed his entire Six Boxes Model © around them. Similarly, with the PSR (LaVigna et al., 1994), the managers or supervisors in a setting are seen as key to driving any systems change. In the pilot study, a marked increase in procedural fidelity was noted in all three support plans following the introduction of practice leadership measures. While the BST and support plan reviews increased fidelity levels, procedural fidelity did not reach over 80% until leadership style became consistent and communication improved. In human services, the pathway to a management role is slightly different from other professional areas. It is not essential to have a

formal qualification in management to become a frontline manager, and often people are promoted based on their natural abilities or temperament. Of the eight frontline managers and deputy managers involved in both studies, only one had any formal training in management or leading a team. All frontline managers had at one stage worked as frontline staff within the team they were now leading. Challenges of management that are required for successful leadership can be learned on the job, and this can be tricky to navigate without formal support. It will be necessary for future implementation of PBS that these frontline managers are provided with adequate training in how to support their teams and be a positive role model in challenging situations. Following Binder's (1998) lead, a systems change intervention should be easy to understand and follow by non-technical people, so they can disseminate the information to their staff teams with confidence.

Practice leadership is a model that was extremely acceptable to all the managers involved as it builds on a skill set, they already have. The nurses involved in the main study (Chapter 5) who led teams found it very familiar as their training at university focused heavily on education, observation and practical applications of the skill, before they were signed off as competent. A nurse would not have the process of taking a blood sample from someone explained over a meeting table or written on a piece of paper and then be expected to be able to do this without any practical training and supervision as it would be considered dangerous. This level of on the job coaching and training should be applied to PBS plans so staff can feel comfortable and at ease with the practice before working alone. Frontline managers had been caught up in paperwork and administration and were not as present in the houses as needed. Having managers work alongside frontline staff allowed them both to share their experience and skills, but also to be present to support and train staff on the spot rather than providing delayed feedback in a formal meeting setting. It is reasonable to suggest that supportive leadership for each step of the four-term contingency that is proposed is critical to improving

procedural fidelity. Frontline managers are required to increase motivation by providing education and incentives, they must be involved in ensuring the staff have the correct resources and training required, that staff are taught the specific behaviours necessary for the BSP and they are essential in providing the correct feedback and reinforcement as and when necessary. Without clear and strong leadership, one or more elements may fall back, making it less likely for procedural fidelity to occur at high levels.

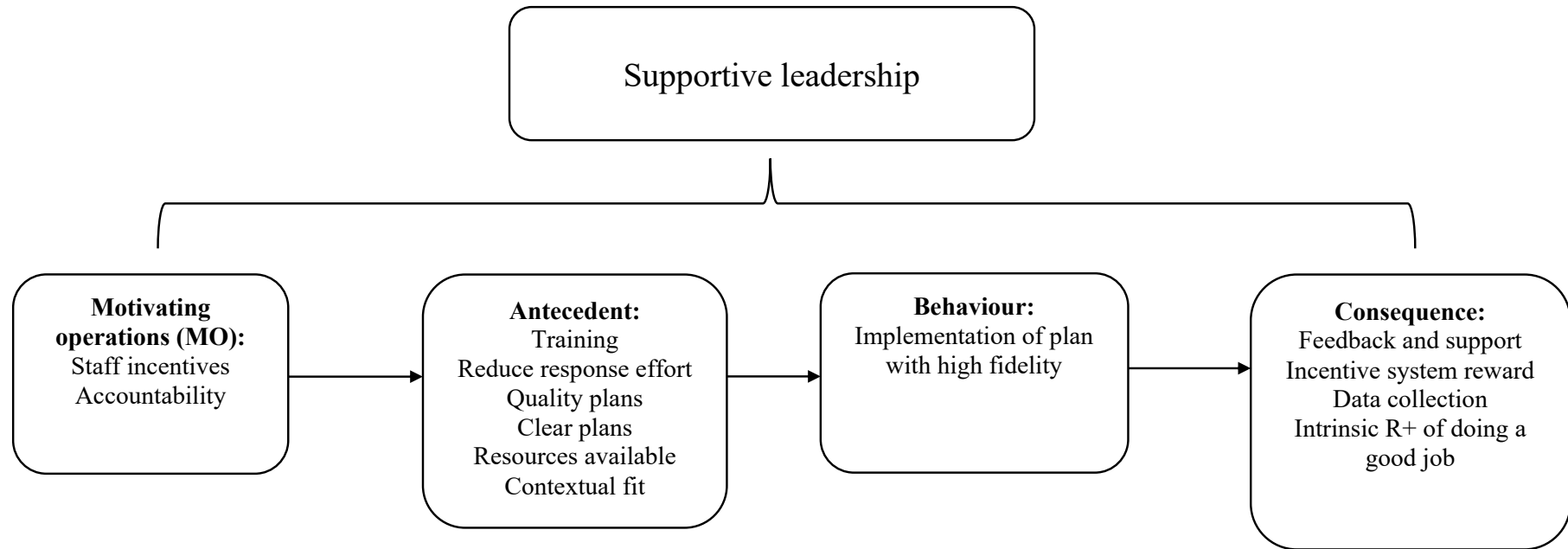


Figure 22: Four-term contingency model for high fidelity of implementation

## 6.5 Implications for Future research

The current studies have displayed that the task of improving procedural fidelity levels of implementation of behaviour support plans in residential services, requires a systemic approach not dissimilar to that used in School Wide Positive Behaviour Support (SW-PBS). Sugai, O’Keefe and Fallon (2012) discuss how SW-PBS requires contextually relevant outcomes which are chosen based on the challenges identified in each particular school system. SW-PBS also involves the implementation of empirically supported interventions to address the needs of staff and students. It is essential for success of SW-PBS that positive and proactive systems of professional development are established, along with the technical supports required such as resources and management support. Finally, Sugai et al. (2012) highlight that data collection and monitoring of implementation is required to ensure behaviour change. These four requirements were also necessary within residential services to develop a level of organisational change. This is not a surprising finding as the thesis sought to develop appropriate PBS practices in residential services which were not in place due to various reasons. These included poor quality PBS plans, lack of training, and minimal monitoring of staff implementation. These studies were carried out on a small scale with only four houses involved. The studies also did not reach high level of senior management and so organisational change on a larger scale could not be observed. Future research into the utility of FBA and interventions including practice leadership at the senior management and policy making level on disseminating the correct supports needed for staff to implement plans with high fidelity would be valuable.

The systematic review conducted as part of this thesis highlighted a dearth of research on procedural fidelity in adult services (Brady et al., 2019). While the systematic review was able to identify interventions that have been successful in improving procedural fidelity in school and clinical settings, research into how these interventions may work or need to be

adapted to suit residential environments would be valuable. The review also highlighted that it was difficult to determine what aspects of intervention packages were most effective in improving fidelity levels. As with the intervention-based studies reported in Chapters 4 and 5, several strategies and interventions were utilised at once, making it unclear which are the most useful and which may not be necessary. A component analysis of different interventions would be valuable to ensure resources are used as efficiently and effectively as possible.

Another area which would be valuable to explore would be including procedural fidelity levels in governing body and organisational inspections. Reports from the CQC and HIQA inspections have been found homes to be of 'good' or 'high standard' while undercover reports have exposed abuses and major inconsistencies in implementation of supports. Unannounced inspections have been found to produce behaviour change in frontline staff with staff performing well or engaging more strictly in guidelines (Barnett, Olenski & Jena, 2017). Research into inspecting evidence of procedural fidelity monitoring and practices to improve fidelity levels within staff teams would be valuable, not only in relation to the outcomes for service users, but also from frontline staff and managers. It is likely improved fidelity levels will improve levels of challenging behaviour, which would likely impact staff job satisfaction levels and reduce burnout.

As mentioned previously, it was not challenging for the researcher to obtain a level of buy-in with regards to the importance of procedural fidelity in practice with frontline staff. There appears to be a gap in the translation from research to practice which excludes the importance of fidelity for service user outcomes. Further research firstly into the level of understanding of procedural fidelity on a broader scale would highlight the size of the problem. Following this, research into the impact creating *procedural fidelity* as a buzzword in organisations has on procedural fidelity levels would be extremely valuable. This would need

to involve higher level, policy makers who can introduce this term into general staff circulation through training and monitoring.

Following from this, a cost-benefit analysis of including measures to improve and record procedural fidelity levels would be a valuable contribution to the literature. This would be recommended particularly as a way to motivate organisations and policy makers to adopt the strategies identified. It is likely that research in this area would provide positive outcomes in relation to supporting individuals financially which would be extremely motivating for organisational uptake. The strategies and interventions found to be successful in improving fidelity of implementation are already embedded in organisational practice. Using these with a focus on procedural fidelity may reduce the staffing required to support individuals and human resources required for recruitment and induction training needed due to high staff turnover.

Allen et al (2005) described methods that organisations can use to embed PBS within organisations. Strategies include involving senior management support to ensure that a strong PBS policy is in place, making PBS practices mandatory and ensuring punishment-based practices are forbidden. They also suggest that organisations invest heavily in expertise with the understanding being that frontline staff and managers should have quick access to PBS specialists rather than having to wait for outside support. These recommendations are essential for quality PBS. However, these recommendations were in place within the organisation the studies took place in and procedural fidelity of interventions was low or variable in baseline phases for twelve out of fourteen behaviour support plans. These findings alone would indicate that there is a missing element to the organisational structure of implementing PBS plans. Having the PBS system 'embedded' in the organisation is not enough to ensure high fidelity. The recommendations developed by Allen et al. (2012) should be developed to incorporate the strategies to improve frontline staff motivation and ability to carry out the plans with high fidelity.



The outcome of the studies would suggest Mansell and Beadle-Brown's (2012) proposal that the introduction of strong practice leaders with a commitment to PBS is an important part of the process. With a strong practice leader at the centre of every PBS plan, quality assurance can be monitored, barriers to implementation can be addressed, morale can be maintained and new skills can be developed. The findings from medication adherence regarding leadership such as the Schwendimann et al.'s (2019) study into adherence to the WHO surgical safety checklist (WHO, 2008) support this proposal. Schwendimann et al. (2019) found the checklist was more likely to be used properly in teams that had lead surgeons who promoted positive cultures and modeled the use of the checklist as opposed to lead surgeons who showed little interest or did not use it. To be able to adhere to guidelines and protocols which are perhaps more time consuming or difficult to use, staff must see the benefits and know that they are being supported by their team lead to be motivated to do so. Further research into the impact of practice leadership training and high-quality leaders on procedural fidelity of implementation would be extremely valuable. Separating this element of the intervention from the package could provide interesting outcomes which would have an impact on priority of trainings and management styles in organisations. The use of experimental and control groups would provide more robust outcomes which could be used to determine future policy and guidelines for organisational implementation of PBS.

Finally, research using techniques and models from implementation science to determine the best way to motivate staff to take on a new approach or practice with a service user they may have known and worked with for fifteen years would be extremely beneficial to the future implementation of PBS. PBS is currently being proposed as the approach to allow people to develop. The goals are to support the reduction of restrictive intervention, to allow local care providers to develop their services so that everyone can be supported in their local community, to equip ordinary social care providers and families with the skills to support those

with even the most challenging behaviours. However, these goals can only be achieved with the consistent input of frontline staff and carers. Implementation science has learned a lot of lessons about how to create behaviour change on a large scale. It is therefore a very prescient time for further PBS research to draw from other sciences and expertise in order to build the body of evidence and to create further momentum in achieving national sustainable changes in the lives of people with learning disabilities and behaviour support needs.

## **6.6 Concluding comments**

These studies have indicated that while procedural fidelity of implementation of behaviour support plans is important in terms of quality standards, in research and practice it is often overlooked and in many cases is low. The studies conducted indicated that while staff are experience many implementation challenges, it is possible to support staff to implement positive behaviour support plans with high fidelity over a long period of time. A systemic, organisation wide package is required to ensure strong leadership is in place to support staff as they engage in implementation, motivated by increased education, staff incentives and training.

This thesis has provided some evidence that fidelity of PBS plans can be improved in residential services, with a refocus of staff priorities and tasks. There are many evidence-based practices both in the fields of OBM and PBS which can be utilised to restructure support systems for staff to ensure they can carry out their jobs effectively. Findings from the studies conducted for this thesis led to a conceptualisation for improving procedural fidelity levels of PBS interventions in residential homes based on the four-term contingency. It is argued that behaviour change can occur in an organisational manner by managing people's motivations, ensuring the antecedent supports required to make the implementation possible are in place, staff are trained to have the behaviour repertoire required for implementation and meaningful and sustainable consequences are delivered to ensure generalisation and maintenance of skills. This combination of supports will likely have a positive impact on the quality of life for the

individuals receiving positive behaviour support as they will be able to learn new, appropriate behaviours and skills which will open access to the community and reduce restrictions in their lives.

## 7. References

- ABA Schools Working Group. (2010). *Proposal for recognition of primary schools for children with autism* Retrieved from [www.abaschoolsforum.com](http://www.abaschoolsforum.com)
- Ackerly, B.A., & True. (2010). *Doing Feminist Research in Political and Social science (2<sup>nd</sup> Edition)*. Red Globe Press.
- Albin, R. W., Lucyshyn, J. M., Horner, R. H., & Flannery, K. B. (1996). Contextual fit for behavior support plans. A model for 'goodness of fit'. In L. K. Koegel, R. L. Koegel, & G. Dunlap (Eds.), *Positive Behavioural Support. Including people with difficult behavior in the community*. Baltimore: Paul H Brookes.
- Allen, D., Lowe, K., Matthews, H., & Anness, V. (2012). Screening for psychiatric disorders in a total population of adults with intellectual disability and challenging behaviour using the PAS-ADD checklist. *Journal of Applied Research in Intellectual Disabilities*, 25, (4) 342-349.
- Allen, D., James, W., Evans, J., Hawkins, S & Jenkins, R. (2005). 'Positive behavioural support: Definition, current status and future directions', *Tizard Learning Review*, 10(2), 4-11.
- American Association on Intellectual and Developmental Disabilities [AAIDD] (2010). *Intellectual Disability, Classification and Systems of Supports*, 11<sup>th</sup> Edition. AAIDD.
- American Psychiatric Association (1994) *The diagnostic and statistical manual of mental disorders-IV (DSM-IV)*. Washington, DC: American Psychiatric Association
- American Psychiatric Association (2013) *The diagnostic and statistical manual of mental disorders-V (DSM-IV)*. Washington, DC: American Psychiatric Association
- Anderson, J.L., Albin, R.W., Mesaros, R.A., Dunlap, G., & Morelli-Robbins, M. (1993). Issues in providing training to achieve comprehensive behavioural support. In J.Reichle & D.P. Wacker (Eds). *Communicative alternatives to challenging behaviour: Integrating*

*functional assessment and intervention strategies* 3, 363-406. Baltimore: Paul H. Brookes.

- Ashton, G.A. (1977). *Essentials of Intellectual Retardation*. Sydney: McGraw-Hill.
- Austin, J., Weatherly, N.L., & Gravina, N. (2005). Using task clarifications, graphic feedback and verbal feedback to increase closing-task completion in a privately owned restaurant. *Journal of Applied Behaviour Analysis*, 38 (1), 117-120.
- Baer, D. M., & Wolf, M. M. (1987). Some still-current dimensions of applied behaviour analysis. *Journal of applied behavior analysis*, 20(4), 313–327.
- Baer, D.M., Wolf, M.W., & Risely, T. R. (1968). Some current dimensions of applied behaviour analysis. *Journal of Applied Behavior Analysis*, 1(1): 91-97.
- Baker, P., & Shepard, J. (2010). Reflections on the periodic service review as a practice leadership tool in services for people with intellectual disabilities and challenging behaviour. *Tizard Learning Disability Review*, 15(3): 29-32.
- Barnett, D., Hawkins, R., McCoy, D., Wahl, E., Sheir, A., Deune, H., & Kimener, L. (2014). Methods used to document procedural fidelity in school-based intervention research. *Journal of Behavioral Education*. 23, 89-107.
- Barnett, M. L., Olenski, A. R., & Jena, A. B. (2017). Patient Mortality During Unannounced Accreditation Surveys at US Hospitals. *JAMA internal medicine*, 177(5), 693–700.
- Bauer, M.S., & Kirchner, J. (2020) Implementation science: What is it and why should I care? *Psychiatry research*, 283, 112376.
- Bauer, M. S., Damschroder, L., Hagedorn, H., Smith, J., & Kilbourne, A. M. (2015). An introduction to implementation science for the non-specialist. *BMC psychology*, 3(1), 32.

- Beadle-Brown, J., Bigby, C., & Bould, E. (2015). Observing practice leadership in intellectual and developmental disability services. *Journal of Intellectual Disability Research*, 59, 1081–1093.
- Beadle-Brown, J., Gifford, J., & Mansell, J. (2003). Staff Experiences and Satisfaction Questionnaire (Learning Disability). Canterbury, UK: Tizard Centre.
- Belfiore, P.J., Fritts, K.M., & Herman, B.C. (2008). The role of procedural integrity. Using self-monitoring to enhance discrete trial instruction (DTI). *Focus on Autism and Other Developmental Disabilities*. 23 (2), 95-102.
- Bigby, C., Clement, T., Mansell, J., & Beadle-Brown, J. (2009). “It’s pretty hard with our ones, they can’t talk, the more able bodied can participate”: staff attitudes about the applicability of disability policies to people with severe and profound intellectual disabilities. *Journal of intellectual disability research*, 53(4).
- Bigby, C., Knox, M., Beadle-Brown, J., Clement, T., & Mansell, J. (2012). Uncovering dimensions of culture in underperforming group homes for people with severe intellectual disability. *Intellectual and Developmental Disabilities*, 50(6), 452–467.
- Binder, C. (1998). The six boxes: A descendant of gilbert’s behaviour engineering model. *Performance Improvement*, 37(6) 48-52.
- Boat T.F., & Wu, J.T. (2015). Committee to Evaluate the Supplemental Security Income Disability Program for Children with Mental Disorders; Board on the Health of Select Populations; Board on Children, Youth, and Families; Institute of Medicine; Division of Behavioral and Social Sciences and Education; The National Academies of Sciences, Engineering, and Medicine; Mental Disorders and Disabilities Among Low-Income Children. Washington (DC): National Academies Press (US)
- Bosworth, H.B. (2012). Enhancing medication adherence: the public health dilemma. *Springer Healthcare*. 2:35-52.

- Bowring, D.L., Totsika, V., Hastings, R.P., & Toogood, S. (2019). Outcomes from a community-based Positive Behavioural Support team for children and adults with developmental disabilities. *Journal of Applied Research in Intellectual Disabilities* 33(2), 193-203.
- Braddock, D., Hemp, R., Rizzolo, M. C., Tanis, E. S., Haffer, L., & Wu, J. (2015). *The State of the States in Intellectual and Developmental Disabilities*. Washington, DC: American Association on Intellectual and Developmental Disabilities.
- Brady, L., Padden, C., & McGill, P. (2019). Improving procedural fidelity of behavioural interventions for people with intellectual and developmental disabilities: A systematic review. *Journal of Applied Research in Intellectual Disabilities*, 32(4)
- Brand, D. (2014). Topical articles: Treatment Integrity: Why it is important regardless of discipline. *Science in Autism Treatment*, 14(2), 6-7, 9-11.
- Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3, 77-101.
- Breitenstein, S.M., Gross, D., Garvey, C., Hill, C., Fogg, L., & Resnick, B. (2010). Implementation fidelity in community based interventions. *Research in nursing and health*. 33(2): 164-173.
- Bruhn, A.L., Hirsch, S.E., & Lloyd, J.W. (2015). Procedural fidelity in school-wide programs: a review of the literature (1993 -2012). *Journal of Primary Prevention*, 36 (5), 335-349.
- Campbell, D. T., & Stanley, J. C. (1963). Experimental and quasi-experimental designs for research on teaching. In N. L. Gage (Ed.), *Handbook of research on teaching* (pp. 171-246). Chicago, IL: Rand McNally.
- Carr E.G, Dunlap G, Horner R.H, Koegel R.L, Turnbull A.P, Sailor W, Anderson, J.L., Albin, R.W., Koegel, L.K., & Fox, L. (2002). Positive behaviour support: Evolution of an applied science. *Journal of Positive Behavior Interventions*. 4:4-16.

- Carr, E.G. (1996). The transfiguration of behavior analysis: Strategies for survival. *Journal of Behavioral Education*, 6, 263-270.
- Carr, E. G. (1977). The motivation of self-injurious behavior: A review of some hypotheses. *Psychological Bulletin*, 84(4), 800–816.
- Codding, R.S., Feinberg, A.B., Dunn, E.K., & Pace, G.M. (2005). Effects of immediate performance feedback on implementation of behaviour support plans. *Journal of Applied Behaviour Analysis*, 38, 205-219.
- Codding, R.S., Livanis, A., Pace, G. M., Vaca, I. (2008). Using performance feedback to improve procedural fidelity of class wide behaviour plans: An investigation of observer reactivity. *Journal of Applied Behavior Analysis*, 41, 417-422.
- Considine, M. & Dukelow, F. (2009). *Irish social policy a critical introduction*. Dublin: Gill and Macmillan Ltd.
- Cook, T.D., & Campbell, D.T. (1979). *Quasi-Experimentation: Design and Analysis issues for Field Settings*. Houghton Mifflin.
- Cook, C. R., Crews, S. D., Wright, D. B., Mayer, G. R., Gale, B., Kraemer, B., & Gresham, F. M. (2007). Establishing and evaluating the substantive adequacy of positive behavioural support plans. *Journal of Behavioral Education*, 16, 191–206.
- Coolican, J., Smith, I.M., & Bryson, S.E. (2010). Brief parent training in pivotal response treatment for pre-schoolers with autism. *Journal of Child Psychology and Psychiatry*, 51:12, 1321-1330.
- Cooper, J.A., Heron, T.E., & Heward, W.L. (2014). *Applied Behavior Analysis*. 2nd Edition. Pearson Education Limited
- Cooper, S.A., Smiley, E., Allan ,L.M., Jackson, A., Finlayson, J., Mantry, D., et al. (2009). Adults with intellectual disabilities: prevalence, incidence and remission of self-



injurious behaviour, and related factors. *Journal of Intellectual Disability Research*, 53:200-216

- Courtemanche, A., Sheldon, J., Sherman, J., Schroeder, S., Bell, A., & House, R. (2014). Assessing the effects of a staff training package on the procedural fidelity of an intervention for self-injurious behaviour. *Journal of Developmental and physical disabilities*. 26: 371-389
- Crossmaker, M. (1991). Behind locked doors: Institutional sexual abuse. *Sexuality and Disability*, 9(3), 201-291.
- Damschroder, L.J., Aron, D.C., Keith, R.E., Kirsh, S.R., Alexander, J.A., & Lowery, J.C. (2009). Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. *Implementation science*, 4(50)
- Dawber, C. (2013). Reflective practice groups for nurses: a consultation liaison psychiatry nursing initiative: part 2—the evaluation, *International Journal of mental health nursing*, 22(3), 241-248.
- Delamater, A. (2006). Improving Patient Adherence. *Clinical Diabetes*. 24(2): 71-77.
- Department of Health (2001). *Valuing People: A new strategy for learning disability for the 21<sup>st</sup> Century*. [Online]. London: HMSO. Available from [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/250877/5086.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/250877/5086.pdf) [Accessed 14 July 2020]
- Department of Health (2012). *Value for money and policy review of disability services in Ireland*. [Online]. Available from <https://www.hse.ie/eng/services/list/4/disability/newdirections/value-for-money-policy-review-of-disability-services-in-ireland.pdf>

- Department of Justice and Inclusion (2017). *National Disability Inclusion Strategy*. [Online] Available from <http://www.justice.ie/en/JELR/dept-justice-ndi-inclusion-strategy-booklet.pdf/Files/dept-justice-ndi-inclusion-strategy-booklet.pdf>
- Deveau, R., & McGill, P. (2013). Leadership at the front line: Impact of practice leadership management style on staff experience in services for people with intellectual disability and challenging behaviour, *Journal of Intellectual and Developmental Disability*
- Dib, N., & Sturmey, P. (2007). Reducing student stereotypy by improving teachers' implementation of discrete-trial teaching. *Journal of applied behavior analysis*, 40(2), 339–343.
- DiGennaro, F.D., Martens, B.K., & McIntyre, L.L. (2005). Increasing procedural fidelity through negative reinforcement: Effects on teacher and student behaviour. *School Psychology Review*. 34, 220-231.
- DiGennaro, F. D, Martens, B. K. & Kleinmann, A. E. (2007). A comparison of performance feedback procedures on teachers' treatment implementation integrity and students' inappropriate behaviour in special education classrooms. *Journal of Applied Behaviour Analysis*, 40, 447-461.
- DiGennaro Reed, F. D., Reed, D. D., Baez, C. N., & Maguire, H. (2011). A parametric analysis of errors of commission during discrete-trial training. *Journal of applied behaviour analysis*, 44(3), 611–615. <https://doi.org/10.1901/jaba.2011.44-611>
- DiGennaro-Reed, F.D., Coddling, R., Catania, C.N., & Maguire, H. (2010). Effect of video modelling on treatment of integrity of behavioural interventions. *Journal of Applied Behavior Analysis*. 43, 291-295.
- Doody, O., Slevin, E., & Taggart, L. (2012). Intellectual disability nursing in Ireland: Identifying its development and future. *Journal of Intellectual Disabilities*. 16(1) 7-16.

- Drifke, M.A., Tiger, J.H., & Wierzba, B.C. (2017). Using behavioural skills training to teach parents to implement three-step prompting: A component analysis and generalization assessment. *Learning & Motivation, 57*, 1-14.
- Dunlap, G., Sailor, W., Horner, R. H., & Sugai, G. (2009). *Overview and history of positive behavior support*. In W. Sailor, G. Dunlop, G. Sugai, & R. Horner (Eds.), *Issues in clinical child psychology. Handbook of positive behavior support* (p. 3–16). Springer Publishing Company.
- Dyer, S., & Quine, L. (1998). Predictors of job satisfaction and burnout among the direct care staff of a community learning disability service. *Journal of Applied Research in Intellectual Disabilities, 11*(4), 320-332.
- Eccles, M.P., & Mittman, B.S. (2006). Welcome to implementation science. *Implementation science, 1*, 1-1.
- Emerson, E., & Bromley, J. (1995) The form and function of challenging behaviours. *Journal of Intellectual Disability Research. 39*:388–98
- Emerson, E., & Einfield, S. (2011). *Challenging Behaviour: Analysis and Intervention in People with Severe Learning Disabilities*. Cambridge University Press.
- Emerson, E, Vick, B, Rechel, B, Muñoz-Baell, I, Sørensen, J & Färm, I (2012), Health inequalities and people with disabilities in Europe, social exclusion, vulnerability and disadvantage task group background paper 5, European Regional Office of the World Health Organization, Copenhagen.
- Fienup, D.M., Luiselli, J.K., Joy, M., Smyth, D., & Stein, R. (2013) Functional Assessment and Intervention for Organizational Behavior Change: Improving the Timeliness of Staff Meetings at a Human Services Organization, *Journal of Organizational Behavior Management, 33*:4, 252-264

- Finn, L. & Sturmey, P. (2008) The effect of peer-to-peer training on staff interactions with adults with dual diagnoses. *Research in Developmental Disabilities*, 31(1), 96-106.
- Fiske, K.E. (2015). Procedural fidelity of School-Based Behavior Analytic Interventions: A review of the research. *Behaviour Analysis in Practice*, 1(2): 19-25.
- Flynn, S.D., & Lo, Y.Y. (2016). Teacher implementation of trail-based functional analysis and differential reinforcement of alternative behaviour for students with challenging behaviour. *Journal of Behavioral Education*, 25, 1-31.
- Foxx, R. M. (2005). Severe aggressive and self-destructive behavior: The myth of the nonaversive treatment of severe behavior. In Jacobson J. W., Foxx R. M., & Mulick J. A. (Eds.), *Controversial therapies for developmental disabilities: Fad, fashion, and science in professional practice* (pp. 295–310). London, UK:
- Frederiksen L.W & Riley A. W(1984) *Improving staff effectiveness in human service settings. Organizational behaviour management approaches*. Routledge.
- Gast, D. L. & Ledford, J. R. (Eds.) (2014). *Single Case Research Methodology: Applications in Special Education and Behavioral Sciences*. New York: Routledge.
- Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C. R., & Innocenti, M. S. (2005). Quality indicators for group experimental and quasi- experimental research in special education. *Exceptional Children*, 71, 149-164.
- Gibson, J.A., Grey, I.M., & Hastings, R.P. (2009). Supervisor support as a predictor of burnout and therapeutic self-efficacy in therapists working in ABA schools. *Journal of Autism and other developmental disorders*, 39(7). 1024-1030.
- Glover, G., Bernard, S., Branford, D., Holland, A., & Strydom, A. (2014). Use of medication for challenging behaviour in people with intellectual disability. *The British journal of psychiatry : the journal of mental science*, 205(1), 6–7.

- Glover, G., & Olsen, V. (2012) Assessment and Treatment Units and Other Specialist Inpatient Care for People with Learning Disabilities in the Count- Me-In Surveys, 2006 to 2010. Improving Health and Lives Learning Disabilities Observatory
- Goldstein, S., Naglieri, J.A. (2013) Interventions for Autism Spectrum Disorders. Translating Science into Practice. Springer-Verlag: New York
- Google LLC (2020) "*Google COVID-19 Community Mobility Reports*".  
<https://www.google.com/covid19/mobility/> Accessed: <28 August 2020>.
- Gore, N.J., McGill, P., Toogood, S., Allen, D., Hughes, J.C., Baker, P., Hastings, R.P., Noone, S.J. & Denne, L.D. (2013). Definition and scope for positive behavioural support. *International Journal of Positive Behavioural Support*, 3(2), 14-23.
- Gormley, L., Healy, O., O'Sullivan, B., O'Regan, D., Grey, I., & Bracken, M. (2019). The impact of behavioural skills training on the knowledge, skills and well-being of front line staff in the intellectual disability sector: a clustered randomised control trial. *Journal of Intellectual Disability Research*, 63(11), 1291–1304
- Gouldner, A. (1971). *The coming crisis of Western Sociology*, London: Heinemann.
- Government of Ireland (2007). *Health Act*: Dublin: Stationary Office.
- Grant, J., Green, L., & Mason, B. (2003). Basic research and health: a reassessment of the scientific basis for the support of biomedical science. *Research Evaluation*. 12, 217-224.
- Gresham F. M, Gansle K. A, Nowell G. H, Cohen S & Rosenblum S. (1993) Procedural fidelity of school based behavioural intervention studies: *School Psychology Review*. 22, 254-272
- Gresham, F. M. (2004). Current Status and Future Directions of School-Based Behavioral Interventions. *School Psychology Review*, 33, 326-343.

- Grey, I., Hastings, R.P., & McClean, B. (2006). Staff training and Challenging Behaviour. *Journal of Applied Research in Intellectual Disabilities, 20*, 1-5
- Grey, I., McClean, B., & Barnes-Holmes, D. (2002). Staff attributions about the causes of challenging behaviours: Effects of longitudinal training in multi-element behaviour support. *Journal of Learning Disabilities, 6*, 297-312
- Hagermoser-Sanetti, L. M., Gritter, K. L., & Dobey, L. M. (2011). Procedural fidelity of interventions with children in the school psychology literature from 1995 to 2008. *School Psychology Review, 40*(1), 72–84
- Harvey, B. (2007). *Evolution of Health service and Health Policy in Ireland*. Dublin: Combat Provery Agency.
- Harvey, M.T., May, M.E., & Kennedy, C. (2004). Nonconcurrent Multiple Baseline Designs and the Evaluation of Educational Systems. *Journal of Behavioral Education, 13*(4), 267-276.
- Hastings, R. P., & Brown, T. (2002). Behavioural knowledge, causal beliefs, and self-efficacy as predictors of special educators' emotional reactions to challenging behaviours. *Journal of Intellectual Disability Research, 46*, 144-150.
- Hastings, RP, Allen, D, Baker, P., Gore, N., Hughes, J.C., McGill, P., Noone, S., & Toogood, S. (2013) A conceptual framework for understanding why challenging behaviours occur in people with developmental disabilities. *International Journal of Positive Behavioural Support 3*(2): 5–13.
- Hatton, C., Rivers, M., Mason, H., Mason, L., Kiernan, C., Emerson, E., Alborz, and. & Reeves, D. (1998) *Staff in services for people with intellectual disabilities*, Hester Adrian Research Centre: University of Manchester, Manchester.
- Health Information and Quality Authority (HIQA) (2013). National Standards for Residential services for Children and Adults with Disabilities. [Online] Available from

<https://www.hiqa.ie/sites/default/files/2017-02/Standards-Disabilities-Children-Adults.pdf>

Health Information and Quality Authority (HIQA) (2016). Guidance for designated centres: Restraint procedures. [Online]. Available from <https://www.hiqa.ie/sites/default/files/2017-01/Guidance-on-restraint-procedures.pdf>

Health Service Executive (2009). Health Service Executive Annual Report and Financial Statements 2009. Dublin: Health Service Executive.

Health Service Executive (2011). Time to move on from congregated settings. A strategy for Community Inclusion. Dublin: Health Service Executive.

Health Research Board (2018) Annual report of the National Intellectual disability Database Committee 2017 Main Findings. Dublin . Health Research Board.

Ho, P.M., Bryson, C.L., & Rumsfeld, J.S. (2009). Medication adherence: its importance in cardiovascular outcomes. *Circulation*. 119 (23): 3028-3035.

Holden, B., & Gitlesen, J.P. (2006). A total population study of challenging behaviour in the county of Hedmark, Norway: Prevalence and risk markers. *Research in Developmental Disabilities*, 27 (4): 456-65.

Hoole, L., & Morgan, S. ( 2011 ). 'It's only right that we get involved': Service-user perspectives on involvement in learning disability services. *British Journal of Learning Disabilities*, 39 ( 1 ), 5 – 10.

Horner, R. H. & Kratochwill. (2012). Synthesizing Single-case research to identify evidence based practices: some brief reflections. *Journal of Behavioural education*, (21), 266-272

Horner, R.H., Sugai, G.M., & Anderson, C.M. (2010). Examining the Evidence Base for School-Wide Positive Behaviour Support. *Focus on Exceptional Children*, 42(8), 1-14.

- Horner, R. H., Todd, A. W., Lewis-Palmer, T., Irvin, L. K., Sugai, G., & Boland, J. B. (2004). The School-Wide Evaluation Tool (SET): A research instrument for assessing school wide positive behavior support. *Journal of Positive Behavior Interventions*, 6(1), 3–12.
- Horner R.H. (2000) Positive behavior supports. *Focus on Autism and Other Developmental Disabilities*. 15:97–105.
- Horner R.H, Dunlap G, Koegel R.L, Carr E.G, Sailor W, Anderson J, (1990). Toward a technology of “nonaversive” behavior support. *Journal of the Association for Persons with Severe Handicaps*. 15:125–132.
- Howard, R., Rose, J., & Levenson, V. (2009). The psychological impact of violence on staff working with adults with intellectual disabilities. *Journal of Applied Behaviour Research in Intellectual disabilities*, 22, 538-548.
- Huberman, W.L., & O’Brien, R. (1999). Improving therapist and Patient Performance in Chronic Psychiatric Group Homes through Goal-setting, Feedback and Positive Reinforcement. *Journal of Organizational Behavior Management*. 19, 13-36.
- Ingersoll, B., & Wainer, A. (2013). Initial Efficacy of Project ImPACT: A parent Mediated Social Communication Intervention for Young children with ASD. *Journal of Autism and Developmental Disorders*. 43, 2943-2952.
- Irish Human Rights and Equality Commission (2017). Comments on Ireland’s 14<sup>th</sup> National Report on the Implementation of the European Social Charter. [Online] Available at [https://www.ihrec.ie/app/uploads/2017/04/F1-IHREC-Comments-on-Irelands-14<sup>th</sup> Report-on-European-Social-Charter\\_April-2017-002.pdf](https://www.ihrec.ie/app/uploads/2017/04/F1-IHREC-Comments-on-Irelands-14th-Report-on-European-Social-Charter_April-2017-002.pdf)
- Iwata, B. A., Wallace, M. D., Kahng, S. W., Lindberg, J. S., Roscoe, E. M., Conners, J., Hanley, G. P., Thompson, R. H., & Worsdell, A. S. (2000). Skill acquisition in the implementation of functional analysis methodology. *Journal of applied behaviour analysis*, 33(2), 181–194.



- Iwata B. A. (1988). The development and adoption of controversial default technologies. *The Behavior analyst, 11*(2), 149–157.
- Iwata, B.A., Dorsey, M.F., Slifer, K.J., Baumann, K.E., & Richman, G.S. (1982). Towards a functional analysis of self-injury. *Analysis and Intervention in Developmental Disabilities, 2* (1), 3-20.
- Jenkins, C., & Allen, C. (1998). The relationship between staff burnout/distress and interactions with residents in two residential homes for older people. *International Journal of Geriatric Psychiatry, 13*, 466-472.
- Johnston, J. M., Foxx, R. M., Jacobson, J. W., Green, G., & Mulick, J. A. (2006). Positive behavior support and applied behavior analysis. *The Behavior analyst, 29*(1), 51–74.
- Kern, L., Choutka, C. M., & Sokol, N. G. (2002). Assessment -based antecedent interventions used in natural settings to reduce challenging behavior: An analysis of the literature. *Education and Treatment of Children, 25*(1), 113–130.
- Kiernan, C., & Moss, S. (1990). Behaviour disorders and other characteristics of the population of a mental handicap hospital. *Journal of Applied Research in Intellectual Disabilities, 3*(1), 3-20.
- Kim, J., Combs, K., Downs, J., & Tillman, F. (2018). Medication adherence: The Elephant in the room. *US Pharmacology 43*(1) 30-34.
- Kvarnstrom, K., Airaksinen, M., & Liira, H. (2018). Barriers and facilitators to medication adherence: a qualitative study with general practitioners. *BMJ Open, 8*(1).
- Lambrechts, G., Kuppens, S., & Maes, B. (2009). Staff variables associates with the challenging behaviour of clients with sever or profound intellectual disabilities. *Journal of Intellectual disability research, 620-632*.

- Laraway, S., Snyckerski, S., Michael, J., & Poling, A. (2003). Motivating operations and terms to describe them: some further refinements. *Journal of applied behaviour analysis, 36*(3), 407–414.
- Larson, S.A., Faykin, F., Muchow-Hallis, L., Pettingel, S., Taylor, B., Hewitt, A., Sowers, M., Fay, M.L. (2015). In-Home and Residential Long-Term Supports and Services for People with Intellectual or Developmental Disabilities: Status and Trends through 2013
- LaVigna, G W., & Willis, T, J. (2012). The Efficacy of Positive Behavioural Support with the Most Challenging Behaviour: The Evidence and Its Implications *Journal of Intellectual & Developmental Disability, (7,3)* p185-195
- LaVigna, G. W., Christian, L., & Willis, T.J. (2005). Developing behavioural services to meet defined standards within a national system of specialist education services. *Paediatric Rehabilitation, 8*, 144-155.
- LaVigna, G.W., Willis T.J., Shaul J., Abedi M., & Sweitzer M. (1994). *The Periodic Service Review: A total quality assurance system for human services and education*. Baltimore: Paul H. Brookes.
- LaVigna, G.W., & Donnellan, A.M. (1986) *Alternatives to punishment: Solving behaviour problems with non-aversive strategies*. New York: Irvington Publishers Inc.
- Lawson, D. A., & O' Brien, R. (1994). Behavioural and self-report measures of staff burnout in developmental disabilities, *Journal of Organisational behaviour management, 14*(2): 37-54.
- Ledford, J. & Gast, D. L. (2013) Measuring procedural fidelity in behavioural research. *Neuropsychological Rehabilitation, 24*(3-4).
- Ledford, J., & Wolery, M. (2013). Procedural Fidelity: An Analysis of Measurement and Reporting Practices. *Journal of Early Intervention, 35*(2): 173-193

- Lowe, K., Allen, D., Jones, E., Brophy, S., Moore, K., & James, W. (2007). Challenging behaviours: prevalence and topographies. *Journal of Intellectual Disability Research*, 51(8), 625-636.
- Lowe, K., Jones, E., Horwood, S., Gray, D., James, W., Jock, A., Allen, D. (2010). The evaluation of periodic service review (PSR) as a practice leadership tool in services for people with intellectual disabilities and challenging behaviour. *Tizard Learning Disability review*. 15:3, 17-28
- Lucyshyn, J. M., Horner, R. H., Dunlap, G., Albin, R. W., & Ben, K. R. (2002). Positive behavior support with families. In J. M. Lucyshyn, G. Dunlap, & R. W. Albin (Eds.), *Families and positive behavior support: addressing problem behavior in family contexts* (pp. 3–43). Baltimore: Paul H. Brookes.
- Luiselli, J.K. (Ed) (2006). Antecedent assessment and intervention: Supporting children and adults with developmental disabilities in community settings. Baltimore: Paul H. Brookes Publishing Co.
- Lukes, S. (1974). *Power, a radical view*. London: Macmillan.
- Lukowiak, T., & Bridges, J. (2010). Punishment strategies: First choice or Last resort. *Journal of the American Academy of special Education Professionals*, 63-72.
- Maginn, D.M., Fallon, L.M., Hagermoser Sanetti, L.M. & Ruberto, L.M. (2012). Training paraeducators to implement a group contingency protocol: Direct and collateral effects. *Journal of behavioural disorders*, 38 (1), 28-37.
- Mansell, J. and Elliott, T. (2001) Staff members' prediction of consequences for their work in residential settings. *American Journal on Mental Retardation*, 106(5), 424-447.
- Mansell, J., Elliott, T., Beadle-Brown, J., Ashman, B. and Macdonald, S. (2002) Engagement in meaningful activity and 'active support' of people with intellectual disabilities in residential care. *Research in Developmental Disabilities*, 23(5), 342-352.

- Mansell, J. and Beadle-Brown, J. (2012). *Active support: Enabling and empowering people with intellectual disabilities*. London: Jessica Kingsley.
- Marshall, C., & Rossman, G. B. (1989). *Designing Qualitative Research*. Newbury Park, CA Sage.
- Martens, B.K., Witt., J.C., & Elliot, S.N. & Darveaux, D.X. (1985). Teacher Judgements concerning the acceptability of school based interventions, *Professional psychology research and practice*, 16(2), 191-198.
- Martin, G. (2015). A review of Behaviour Practitioners in Post (Ireland). Conference paper presented at British Institute of Learning Disabilities PBS Conference. Dublin Ireland.
- Maslach, C. (2003). Job burnout: New directions in research and intervention. *Current directions in psychological science*, 12(5), 189-192.
- Maulik, P.K., Mascarenhas, M.N., Mathers, C.D., Dua, T., & Saxena, S. (2013). Prevalence of intellectual disability: a meta-analysis of population based studies. *Research in Developmental disabilities*. 32(2): 419-436.
- McClellan, B., Dench, C., Grey, I.M., Shanahan, S., Fitzsimmons, E.M., Hendler, J. & Corrigan, M. (2005) 'Person Focused Training: A Model for Delivering Positive Behavioural Supports to People with Challenging Behaviours', *Journal of Intellectual Disability Research* 49 (5): 340—52 .
- McConnachie G., & Carr E.G. (1997) The effects of child behavior problems on the maintenance of intervention fidelity. *Behavior Modification*. 21(2):123-158.
- McKenney, E.L.W., & Bristol, R.M. (2015). Supporting Intensive Interventions for students with Autism spectrum disorder: Performance feedback and discrete trial training. *School Psychology Quarterly*. 30 (1). 8-22.
- McVilly, K., Webber, L., Paris, M., & Sharp, G. (2013). Reliability and utility of the Behaviour Support Plan Quality Evaluation Tool (BSP-QEII) for auditing and quality

- development in services for adults with intellectual disability and challenging behaviour. *Journal of Intellectual Disability Research*, 57, 716-727.
- Michael, J.L. (2004). *Concepts and Principles of Behavior Analysis*. Kalamazoo, Mich: Western Michigan University, Association for Behaviour Analysis International.
- Michie, S., West, R., & Amlot, R. (2020). Slowing down the covid-19 outbreak: changing behaviour by understanding it. *BMJ Opinion*. March 11<sup>th</sup> 2020.
- Miller, M.V., Carlson, J. & Sigurdsson, S.O. (2014). Improving procedural fidelity in a human service setting using lottery based incentives. *Journal of organisational behaviour management*. 34(1), 29-38.
- Minjarez, B.M., Williams, S.E., Mercier, E.M., & Hardan, A,Y. (2011). Pivotal response group treatment program for parents of children with autism. *Journal of Autism and developmental disorders*. 41: 92-101.
- Moeschler, J.B. (2013). Neurodevelopmental Disabilities: Global developmental delay, Intellectual disability and autism. In D.L. Rimoin, R.E. Pyrotiz & B. Korf (Eds) *Emery and Rimoin's Principles and practice of medical Genetics (Sixth Edition)* pp 1-15: Elsevier Science Ltd.
- Monchar, F.J., & Prinz, F.J. (1991). Treatment fidelity in outcome studies. *Clinical Psychology Review*, 11, 247-266.
- Morgan, C. A., & Wine, B. (2018). Evaluation of Behavior Skills Training for Teaching Work Skills to a Student with Autism Spectrum Disorder. *Education and Treatment of Children*, 41(2), 223–232.
- Mosteller, F. (1981). Innovation and evaluation. *Science*, 211, 881-886.
- Mouzakitis, A., Coddington, R.S., & Tryon, G. (2015). The effects of self-monitoring and performance feedback on the procedural fidelity of behaviour intervention plan

implementation and generalization. *Journal of positive behaviour interventions*. 17(4) 223-234.

National Audit Office (2015) Care services for People with Learning Disabilities and Challenging Behaviour.

National Institute for Health and Care Excellence (2015) Challenging behaviour and learning disabilities: prevention and interventions for people with learning disabilities whose behaviour challenges. [Online] Available from <https://www.nice.org.uk/guidance/ng11/resources/challenging-behaviour-and-learning-disabilities-prevention-and-interventions-for-people-with-learning-disabilities-whose-behaviour-challenges-1837266392005> [Accessed 15 July 2020]

National Institute for Clincial Excellence (NICE) (2015). *Challenging behaviour and learning disabilities: Prevention and interventions for people with learning disabilities whose behaviour challenges*. London: NICE.

Oliver C. (1993) Self-injurious behaviour: From response to strategy. In C. Kiernan's *Research to Practice?: Implications of Research on the Challenging behaviour of People with Learning Disability* (pp.135-88). BILD Publications: Clevedon.

Office for National Statistics (2019). Estimates of the population for the UK, England and Wales, Scotland and Northern Ireland. [Online] Available from <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland>

O'Neill, R.E., Horner, R.H., Albin, R.W., Sprague, J.R., Storey, K., & Newton, J.S. (1997). *Functional assessment and programme development for problem behaviour*. Pacific Grove, CA: Brooks/Cole Publishing Company.

- Palaganas, E. C., Sanchez, M. C., Molintas, M. P., & Caricativo, R. D. (2017). Reflexivity in Qualitative Research: A Journey of Learning. *The Qualitative Report*, 22(2), 426-438.
- Palmer D.R., Pahl A.V., Carlson J.S. (2011) Behavioral Consultation. In: Goldstein S., Naglieri J.A. (eds) Encyclopedia of Child Behavior and Development. Springer, Boston, MA
- Parker, R. I., & Vannest, K. (2009). An improved effect size for single-case research: Nonoverlap of all pairs. *Behavior Therapy*, 40(4), 357–367.
- Paul, P.V., & Wang, Y (2011). Literate thought. Understanding comprehension and literacy. Jones & Bartlett Learning.
- PBS Academy (2015). The Positive Behavioural Support Competence Framework [online] Available from <http://pbsacademy.org.uk/wp-content/uploads/2016/11/Positive-Behavioural-Support-Competence-Framework-May-2015.pdf>
- Pelletier, K., McNamara., Braga-Kenyon., & Ahern, W.H. (2010). Effect of video self-monitoring on procedural integrity. *Behavioural Interventions*, 25, 261-274.
- Plavnick, J.B., Ferreri, S.J., & Maupin, A.N. (2010). The effects of self-monitoring on the procedural integrity of behavioural intervention for young children with developmental disabilities. *Journal of Applied Behavior Analysis*. 43, 315-320.
- Pollard, J.S., Higbee, T.S., Akers, J.S., Brodhead, M.T. (2014). An evaluation of interactive computer to implement discrete trials with children with Autism. *Journal of applied behaviour analysis*. 47, 765-776.
- Prochaska, J. O., & DiClemente, C. C. (1982). Transtheoretical therapy: Toward a more integrative model of change. *Psychotherapy: Theory, Research & Practice*, 19(3), 276-288.
- Quin, S., & Redmond, B. (Eds.). (2005). *Mental health and social policy in Ireland*. University of Dublin Press/Dufour Editions.

- Rabionet, S.E. (2011) How I learned to design and conduct semi-structured interviews: An ongoing and continuous journey. *Qualitative Report*. 16(2)
- Raczka, R. (2005). A focus group enquiry into stress experienced by staff working with people with challenging behaviours. *Journal of intellectual disabilities*, 9(2), 167-177.
- Reed, D. D., & Azulay, R. L. (2011). Functional behavioral assessment (FBA). In J. K. Luiselli (Ed.), *Teaching and behavior support for children and adults with autism spectrum disorder: A practitioner's guide* (pp. 13–21). New York, NY: Oxford University Press.
- Reichow, B., Volkmar, F.R., & Cicchetti, D.V. (2008). Development of an evaluative for determining the strength of research evidence in autism. *Journal of Autism and developmental disorders*, 38, 1311-1319.
- Riley, A.W., & Frederiksen, L.W. (1984). Organizational behaviour management in human service settings: Problems and prospects. *Journal of Organizational Behavior Management*, 5(3-4), 3-16.
- Rojahn, J., Matson, J. L., Lott, D., Esbensen, A. J., & Smalls, Y. (2001). The Behavior Problems Inventory: An instrument for the assessment of self-injury, stereotyped behavior and aggression/destruction in individuals with developmental disabilities. *Journal of Autism and Developmental Disorders*, 31, 577 – 588.
- Rose, J. & Schelewa-Davies, D. (1997). The relationship between staff stress and team climate in residential services. *Journal of Learning Disabilities for Nursing, Health and Social Care*, 1, 19-24.
- Rose, N., Rose, J., & Kent, S. (2012). Staff training in intellectual disability services: a review of the literature and implications for mental health services provided to individuals with intellectual disability. *International Journal of Developmental Disabilities*, 58(1), 24-39.



- Royal College of Psychiatrists, British Psychological Society and Royal College of Speech and Language Therapists (2007). *Challenging behaviour: A Unified Approach*. Clinical and service guidelines for supporting people with learning disabilities who are at risk of receiving abusive or restrictive practices. [Online] Available at [https://www.rcpsych.ac.uk/docs/default-source/improving-care/better-mh-policy/college-reports/college-report-cr144.pdf?sfvrsn=73e437e8\\_2](https://www.rcpsych.ac.uk/docs/default-source/improving-care/better-mh-policy/college-reports/college-report-cr144.pdf?sfvrsn=73e437e8_2)
- Rubin, G. J., Amlôt, R., Page, L., & Wessely, S. (2009). Public perceptions, anxiety, and behaviour change in relation to the swine flu outbreak: cross sectional telephone survey. *BMJ (Clinical research ed.)*, 339, b2651.
- Sabaté E, ed. (2003). *Adherence to Long-Term Therapies: Evidence for Action*. Geneva, Switzerland: World Health Organization.
- Sanetti, L. M. H., Gritter, K. L., & Dobey, L. M. (2011). Treatment integrity of interventions with children in the school psychology literature from 1995 to 2008. *School Psychology Review*, 40(1), 72–84.
- Sanetti, L. M. H., & Kratochwill, T. R. (2009). Treatment integrity assessment in the schools: An evaluation of the Treatment Integrity Planning Protocol. *School Psychology Quarterly*, 24(1), 24–35.
- Saunders, R.R., & Spradlin, J.E. (1991). A supported routines approach to active treatment for enhancing independence, competence and self-worth. *Behavioral Residential Treatment*, 6(1), 11-37.
- Schwendimann, R., Blatter, C., Luthy, M., Mohr, G., Girard, T., Batzer, S., Davis, E., & Hoffman, H. (2019). Adherence to the WHO surgical safety checklist: an observational study in a Swiss academic center. *Patient safety in surgery*. 13:14.

- Sheehan, R., Hassiotis, A., Walters, K., Osborn, D., Strydom, A., & Horsfall, L. (2015). Mental illness, challenging behaviour and psychotropic drug prescribing in people with intellectual disability: UK population based cohort study. *British Medical Journal*. 351.
- Singer G.H.S., & Wang M. (2009) The Intellectual Roots of Positive Behavior Support and Their Implications for Its Development. In: Sailor W., Dunlap G., Sugai G., Horner R. (eds) *Handbook of Positive Behavior Support. Issues in Clinical Child Psychology*. Springer, Boston, MA
- Skinner, B.F. (1971). *Beyond Freedom and Dignity*. Knopf/Random House.
- Sobsey, D. & Varnhagen, C. K. (1988). *Sexual Abuse, Assault and Exploitation of People with Disabilities*. Ottawa, ON: Health and Welfare Canada.
- Stokes, T.F & Baer, D.M, (1977). An implicit technology of generalization. *Journal of Applied Behaviour Analysis*., 10. 349-367
- Sugai, G.M., O'Keefe, B., & Fallon, L.M (2012). A contextual consideration of Culture and School-Wide Positive Behaviour Support. *Journal of Positive Behaviour Interventions*. 14(4): 197-208.
- Sweeney, J., & Mitchell, D. (2009). A challenge to nursing: an historical review of intellectual disability nursing in the UK and Ireland. *Journal of Clinical Nursing*. 18(19), 2754-2763.
- Taitel, M., Jiang, J., Rudkin, K., Ewing, S., & Duncan, I. (2012). The impact of pharmacist face-to-face counselling to improve medication adherence among patients initiating statin therapy. *Patient preference and adherence*, 6, 323–329.
- The AAIDD Ad Hoc Committee on Terminology and Classification. (2010). *Intellectual disability: Definition, classification, and systems of supports* (11th ed. of AAIDD definition manual). American Association on Intellectual and Developmental Disabilities.

- Thakkar, J., Kurup, R., Laba, T., Santo, K., Thiagalingam, A., Rodgers, A., Woodward, M., Redfern, J., & Chow, C. (2016). Mobile telephone text messaging for medication adherence in chronic disease A Meta-analysis. *JAMA Internal Medicine*, 176(3), 340-349.
- Thompson, N. (1995): *Theory in practice in health and social welfare*: Open university press.
- Tomlinson, S.R.L., Gore, N., & McGill, P. (2018). Training Individuals to Implement Applied Behaviour Analytic Procedures via Telehealth: A Systematic Review of the Literature. *Journal of Behavioural Education*, 27, 172-222.
- Unwin, G. L., & Deb, S. (2008). Use of medication for the management of behavior problems among adults with intellectual disabilities: a clinicians' consensus survey. *American journal of mental retardation : AJMR*, 113(1), 19–31.
- Van Houten, R., Axelrod, S., Bailey, J. S., Favell, J. E., Foxx, R. M., Iwata, B. A., & Lovaas, O. I. (1988). The right to effective behavioral treatment. *Journal of applied behaviour analysis*, 21(4), 381–384.
- Vince Garland, K.M., Holden, K., Garland, D. P. (2016). Individualized Coaching in the TLE TeachLivE Lab: Enhancing Fidelity of implementation of system of least prompts among novice teachers of students with autism. *Teacher Education and special education*. 39(1), 47-59.
- Vogel L. (2017). Renewed support for surgical safety checklist. *CMAJ : Canadian Medical Association journal*, 189(46), 1431–1432.
- Vollmer, T.R., Roand, H.S., Ringdahl, J. E., & Marcus, B.A. (1999). Evaluating treatment challenges with differential reinforcement of alternative behaviour. *Journal of Applied Behavior Analysis*, 32, 9-23.
- Vollmer T.R., Sloman, K.N., & St-Peter Pipkin C (2008) Practical implications of Data Reliability and Treatment Integrity Monitoring. *Behavior Analysis in Practice* 1, 4-11.

- Watson, P.J., & Workman, E.A. (1981). The non-concurrent multiple baseline across-individuals design: An extension of the traditional multiple baseline design. *Journal of Behavioral Therapy and Experimental Psychiatry*, 12, 257-259.
- West, R., Michie, S., Rubin, G.J., Amlot, R. (2020). Applying principles of behaviour change to reduce SARS-CoV-2 transmission. *Nature of Human Behavior*, 4, 451–459
- Weinkauff, S.M., Zeug, N.M., Anderson, C.T., & Ala'i-Rosales, S. (2011). Evaluating the effectiveness of a comprehensive staff training package for behavioral interventions for children with autism. *Research in Autism Spectrum Disorders*. 5, 864-871.
- Wheeler, J. J., Baggett, B.A., Fox, J., & Blevins, L. (2006). Procedural fidelity: A review of intervention studies conducted with children with autism. *Focus on Autism and Other Developmental Disabilities*, 21, 45-54.
- Wilder, D.A., Atwell, J., & Wine, B. (2006). The effects of varying levels of procedural fidelity on child compliance during treatment with a three-step prompting procedure. *Journal of Applied Behaviour Analysis*. 39 (3), 369-373.
- Wilkinson, L. A. (2007). Assessing treatment integrity in behavioural consultation. *International Journal of Behavioral Consultation and Therapy*, 3(3), 420-432.
- Wolery, M. (2011) Intervention research: The importance of fidelity measurement. *Topics in early childhood special education*, 31(3) 155-157
- Wolery, M. (1994). Procedural fidelity: A reminder of its functions. *Journal of Behavioural Education*. 4: 381-386.
- Wolf M. M. (1978). Social validity: the case for subjective measurement or how applied behavior analysis is finding its heart. *Journal of applied behavior analysis*, 11(2), 203-214.

Wood, B.K., Oakes, W., Fetting, A., & Lane, K.L. (2015). A review of the evidence base of functional assessment-based interventions for young students using one systematic approach. *Behavioral disorders, 40*, 230-250.

World Alliance for Patient safety. (2008). *WHO guidelines for safe surgery*. Geneva: World Health Organisation

## 8. Appendices

### Appendix A: Study 1: Information sheet (Chapter 3)

*Tizard Centre, University of Kent Canterbury,  
Kent, CT2 7LZ  
Lucy Brady, PhD Candidate  
Email: lmb47@kent.ac.uk  
Phone: 0834852986*



#### **Participant Information Sheet**

**Research title: Treatment integrity in residential services; perspectives of front line staff, management and clinicians.**

Dear (name of front line staff/service manager/behaviour specialist),

As the keyworker/service manager/behaviour specialist of Mr. X, you are being invited to take part in a research study conducted by Lucy Brady (Tizard Centre, University of Kent).

Your participation in this study is entirely voluntary. Before you decide whether you want to continue to participate it is important for you to understand why the research is being conducted and what it will involve.

**What is treatment integrity?** Treatment integrity is the accuracy with which behaviour support plans and other interventions are carried out.

**What is the purpose of this study?**

The purpose of this study is to explore the perspectives and thoughts of individuals who work with adults with intellectual disabilities and behaviours that challenge. The study will ask front line staff, clinicians and managers about their opinions on how behaviour support plans are developed and implemented.

**What would I have to do if I agree to take part?**

If you agree to take part, you will be asked to provide your views and opinions on how behaviour support plans are developed and implemented within your place of work. This will happen in the form of a 1:1 interview with the researcher in a location of your choosing at a time convenient to you. The interview will not take longer than one hour. You will also be asked to complete a brief questionnaire detailing your job title, place of work and how long you have worked in human services.

**What are the advantages of taking part?**

By taking part in the study you will be contributing to research which aims to strengthen the human services field. Taking part in the study may provide suggestion of how to improve or promote current practices and it is hoped that the study will increase understanding of how best to implement behaviour support plans.

**What are the possible disadvantages of taking part?**

It may be time consuming to participate, but we intend to keep interviews to one hour maximum. We hope you do not find it upsetting but can stop whenever you want

**Do I have to take part?**

No. Your participation in the study is entirely voluntary. If you do decide to take part you are still free to withdraw at any time, without giving a reason and your answers will not be included in the study. All participants have the right to complain at any time if they feel they have been treated

badly or unfairly by the researchers. It is advised that in the first instance the participant should seek to resolve the complaint with researchers themselves. If this is not appropriate or they are still not satisfied, they should contact the researcher supervisor, Ciara Padden or Peter McGill. If they remain unsatisfied, they can complain to the Secretary of the Tizard Ethics Committee, Jo Ruffells ([J.Ruffells@kent.ac.uk](mailto:J.Ruffells@kent.ac.uk), 01227827955).

**Will what I say in this study be kept confidential?**

Yes. All material and data gathered during this research will be treated as confidential and securely stored. Only the researcher and her supervisors will have access to the information and it will not be shared. You will not be identifiable in any reports of the study.

**What will happen to the results of the research study?**

The results will be used as part of a PhD thesis which the researcher will submit for her final grading. There is a possibility that the findings will be published and presented at conferences. At the end of the study will send you a summary of the findings. Again, no individuals will be identifiable.

**Who is organising this research?**

Research is being conducted as part of PhD with the University of Kent at Canterbury. Supervisor details can be found below.

**Contact**

Please do not hesitate to contact Lucy Brady or the supervising team if you have any queries.

Dr. Ciara Padden: [c.m.padden@kent.ac.uk](mailto:c.m.padden@kent.ac.uk); +44 1227 824640

Prof. Peter McGill: [P.McGill@kent.ac.uk](mailto:P.McGill@kent.ac.uk); +44 1227 823838

If you wish to take part, please complete the consent form attached to this information sheet.

***Thank you for taking the time to read this.***

## Appendix B : Study 1 Interview Questions (Chapter 3)

### Front line staff questions

1. We are going to be mainly talking about X today, but before that can you tell me about your experiences of working with people with challenging behaviours in the past?  
*(History, general experiences, perspectives)*
2. Tell me about the types of problem behaviours that X shows.  
What behaviour(s) do you find most challenging?
3. Tell me how X's current support plan came about?  
*(Referral process, assessment, write up, implementation)*
4. What are your thoughts about the support plan?  
*Easy/hard to understand*  
*Applicable to day to day service*  
*Does it work/not work?*
5. Could you describe the training process you went through to be able to implement this support plan?  
What did you enjoy? What did you not enjoy?
6. Tell me about any support you currently receive from your manager and the clinician to be able to support X?  
Would this be a similar level of support to other support plans you've been involved with?  
Examples
7. What does the term "treatment integrity" mean to you?  
Brief discussion about what treatment integrity is. Interviewer may need to explain the concept before the next questions.
8. What ways is treatment integrity measured for X's support plan?
9. Would there be any times that you would be unable to follow the support plan exactly as it is written?  
What would be the reasons for this?  
*Time*  
*Resources*  
*Don't agree with the plan*  
*Don't understand the plan*  
*Other staff not doing it*  
Is there a way for you to let people know this is the case?  
*Communication with other staff*  
*Communication with managers and clinician*
10. What do you think would help people be able to increase treatment integrity when supporting X?
11. What ways do you think the manager and clinician could support you more?
12. Do you have any other thoughts on why people sometimes find it difficult to use support plans the way they are written, or things that might make this easier for support staff?



**Management questions**

1. We are going to be mainly talking about X today, but before that can you tell me about your experiences of working with people with challenging behaviours in the past? (*History, general experiences, perspectives*)
  2. Tell me about the types of problem behaviours that X shows.  
What behaviour(s) do you find are most challenging to the service?
  3. Tell me how did X's current plan came about?  
(*Referral process, assessment, write up, implementation*)
  4. What are your thoughts about the support plan?  
*Easy/hard to understand*  
*Applicable to day to day service*  
*Does it work/not work?*
  5. Could you describe the training process that front line staff went through to be able to implement this plan? What training did you receive about the plan?  
What do you think worked well? What did not work as well?
  6. Tell me about the support the clinician provides to you and front line staff? What ways to you support staff in implementing the BSP correctly?
  7. What does the term "treatment integrity" mean to you? Brief discussion about what treatment integrity is. Interviewer may need to explain the concept before the next questions.
  8. What ways is treatment integrity is measured for X's BSP?
  9. Would there be any times that front line staff would be unable to follow the support plan exactly as it is written? What would be the reasons for this?  
*Time*  
*Resources*  
*Don't agree with the plan*  
*Don't understand the plan*  
*Other staff not doing it*
- How do staff let people know this is the case?
- Communication with other staff*  
*Communication with managers and clinician*
10. What do you think would help people be able to increase treatment integrity when supporting X?
  11. What ways do you think the clinician could support you and front line staff more?  
What ways could front line staff improve how they support X?
  12. Do you have any other thoughts on why people sometimes find it difficult to use support plans the way they are written, or things that might make this easier for staff?

**Clinical questions**

1. We are going to be mainly talking about X today, but before that can you tell me about your experiences of working with people with challenging behaviours in the past? (*History, general experiences, perspectives*)
2. Tell me about the types of problem behaviours that X shows.  
What behaviour(s) do you find are most challenging to the service?
3. Tell me how did X's current plan came about?  
(*Referral process, assessment, write up, implementation*)
4. What are your thoughts about the support plan?  
*Easy/hard to understand*  
*Applicable to day to day service*  
*Does it work/not work?*  
*Any challenges when setting it up*
5. Could you describe the training process that staff went through to be able to implement this plan?  
What do you think worked well? What did not work as well?
6. Tell me about the support you provide to the staff. What ways do you support staff in implementing the BSP correctly?
7. What does the term "treatment integrity" mean to you? Brief discussion about what treatment integrity is. Interviewer may need to explain the concept before the next questions.
8. What ways is treatment integrity is measured for X's BSP?
9. Would there be any times that front line staff would be unable to follow the support plan exactly as it is written?  
What would be the reasons for this?  
*Time*  
*Resources*  
*Don't agree with the plan*  
*Don't understand the plan*  
*Other staff not doing it*  
  
How do staff let people know this is the case?  
*Communication with other staff*  
*Communication with managers and clinician*
10. What do you think would help people be able to increase treatment integrity when supporting X?
11. What ways do you think the front line staff and house manager could improve their implementation of the support plan?
12. Do you have any other thoughts on why people sometimes find it difficult to use support plans the way they are written, or things that might make this easier for staff?



## Appendix D: Study 1 Service user information sheet (Chapter 3)

Tizard Centre, University of Kent Canterbury,  
Kent, CT2 7LZ  
Lucy Brady, PhD Candidate  
Email: lmb47@kent.ac.uk  
Phone: 0834852986

**TIZARD**  
University of Kent

### Service user information sheet

**Treatment integrity in residential services; perspectives of front line staff, management and clinicians.**

**My name is Lucy Brady**



**I am studying at University**



**I am trying to find out what staff find easy and hard  
About supporting people in their homes**



**I would like to speak with people who work with you  
In your house  
I would like to talk to them about ways they  
Support you**



**You can say no to letting staff talk to me**



**Or you can change your mind at anytime**



**Everything we talk about will be kept private**



**Shhhhh!**

**The information we collect may be published  
In a professional journal (a magazine for staff  
Who work with people with intellectual disability)  
We will not say your name**



## Appendix E: Study 1 Service user consent form (Chapter 3)

Tizard Centre, University of Kent Canterbury,  
Kent, CT2 7LZ  
Lucy Brady, PhD Candidate  
Email: lmb47@kent.ac.uk  
Phone: 0834852986



### Service user consent form




**Treatment integrity in residential services; perspectives of front line staff, management and clinicians.**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

I have had the information about the research explained to me and have gone through the information sheet with staff.

I understand that Lucy Brady would like to talk to staff about ways that they support me.

	Yes, that's OK	No, that's not OK
I am happy for the researcher to		
Speak with staff who support me in my house 		

Signed \_\_\_\_\_

## Appendix F: Fidelity checklist (Chapters 4 and 5)

Steven: Procedural fidelity checklist

Observer:

Date & Time:

Staff member (s):

Staff will be observed at least once a week during their work. This checklist will be used to guide the Researcher/Observer/PIC while carrying out observations. If it is not possible to observe the staff engaging in step, mark as N/A. If it is possible to determine if step was completed via daily notes mark with +. Mark any stage complete with a +. Mark any step not completed with a -

### Proactive supports:

- Visual supports/ lamh used consistently
- Access to quiet areas
- 1:1 sensory time provided 3 times a day
- 5-minute warning given before beginning of any activity
- Supervised access to kitchen
- Drinks person assigned
- Access to bath during staff dinner
- Tea pots removed from table when Steven in house
- Steven using his own cup
- Positive language used consistently

### Reactive strategies

- Pre-cursor behaviour identified (standing close to staff and rocking)
- Staff immediately provide verbal support "You're doing great" and show Steven problem solving visual 1
- Staff say "Show me"
- If Steven chooses an option say "Thanks Steven, I'll help now"
- If Steven is unable to choose an option, staff show Steven forced choice visual
- Staff say "Where will we go?"
- If Steven makes a choice, staff say "Good choice, let's go" and immediately go to chosen area with Steven and provide him with 1:1 sensory support for at least 10 minutes
- If Steven is unable to make a choice, provide him with staff choice visual and allow him to choose who will work with.
- If Steven is unable to make a choice at this stage and is displaying loud vocalisations and self-stimulatory behaviours such as rocking and pacing, staff should give PRN and sit close to Denis without speaking until he begins to calm.

Procedural fidelity score: Total steps marked + =  
 Total steps marked - =  
 Total steps marked N/A =

To get % PF: Divide steps marked '+' by total possible steps and multiply by 100

### Appendix G: Adaptions of IRP-15 social validity questionnaire (Chapters 4 and 5)

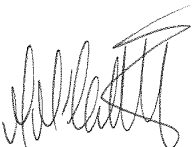
	Strongly disagree	Disagree	Slightly disagree	Slightly Agree	Agree	Strongly agree
This was an acceptable intervention for improving staff implementation of guidelines	1	2	3	4	5	6
Most social care workers/care assistants would find this intervention appropriate	1	2	3	4	5	6
This intervention proved effective in improving procedural fidelity	1	2	3	4	5	6
I would suggest the use of this intervention to other social care workers	1	2	3	4	5	6
The implementation of guidelines was poor enough to warrant intervention	1	2	3	4	5	6
Most social care workers would find this intervention suitable for the needs of staff	1	2	3	4	5	6
I would be willing to use this intervention in the workplace	1	2	3	4	5	6
This intervention did not result in negative side effects for staff	1	2	3	4	5	6
This intervention would be appropriate for a variety of staff	1	2	3	4	5	6
This intervention was consistent with other approaches used in the organisation	1	2	3	4	5	6
The intervention was a fair way to support the staff	1	2	3	4	5	6
The intervention was reasonable for the needs of the staff	1	2	3	4	5	6
I liked the procedures used in the intervention	1	2	3	4	5	6
This intervention was a good way to handle staff's needs	1	2	3	4	5	6
Overall this intervention was beneficial for staff	1	2	3	4	5	6



## Appendix H: Ethics approval form (Chapter 4)



### Tizard Ethics Feedback Form

<b>Student Name:</b>	Lucy Brady
<b>Supervisor:</b>	Dr Ciara Padden & Prof Peter McGill
<b>Title:</b>	<i>Increasing procedural fidelity of behavioural interventions: A pilot study</i>
<p>The Chair of the Tizard Ethics Committee has considered the amendments to the above proposal and confirms that this now has ethical approval.</p> <p><b>Signed: J.Ruffels</b> <span style="float: right;"><b>Date: 19.02.18</b></span></p> <p><b>On behalf of Tizard Ethics Committee</b></p>	
<b>Alterations approved by Supervisor</b>	<p><i>Ciara Padden</i>  <b>Signature</b> <span style="float: right;"><b>Date 16/2/18</b></span></p>
<b>Final approval On behalf of Tizard Ethics Committee</b>	<p><b>Michelle McCarthy</b></p> <p>  <b>Signature</b> <span style="float: right;"><b>Date 16.2.18</b></span></p>

## Appendix I: Frontline staff information sheet (Chapter 4)

Tizard Centre, University of Kent Canterbury,  
Kent, CT2 7LZ  
Lucy Brady, PhD Candidate  
Email: lmb47@kent.ac.uk  
Phone: 0834852986



### **Participant Information Sheet: Front line staff**

#### **Research title: Increasing procedural fidelity of behavioural interventions: A pilot study**

Dear X,

As a front-line staff member working in [Organisation name] you are being invited to take part in a research study conducted by Lucy Brady as part of her PhD at the Tizard Centre, University of Kent.

Your participation in this study is entirely voluntary. Before you decide whether you want to continue to participate it is important for you to understand why the research is being conducted and what it will involve.

#### **A brief introduction:**

The researcher will be working with [Organisation name] to adapt the systems in place for developing and monitoring behaviour support plans. A pilot study is being run in [House name] before being rolled out in a larger study within the organisation. Some aspects of how you carry out your role may change, including things like taking part in training regarding behaviour support plans or collecting data. These tasks will become part of your typical duties within [Organisation name]. The researcher intends to collect data before and after the introduction of the new system to evaluate its effectiveness before carrying out a study with the whole organisation.

#### **What is procedural fidelity?**

Procedural fidelity is the accuracy with which behaviour support plans and other interventions are carried out.

#### **What is the purpose of this study?**

The purpose of this study is to increase the level of procedural fidelity of behaviour interventions carried out by front-line staff in residential services. Ensuring high levels of procedural fidelity in human services is a whole team effort. This study is focusing on changing the processes in place to maximise opportunity for high procedural fidelity. This is a pilot study that aims to explore not only how procedural fidelity can be increased, but maintained and generalised across service users, staff and settings. The findings are expected to inform a larger, organisation wide approach in the future.

#### **What would I have to do if I agree to take part?**

If you agree to take part, you will be asked to complete a small number of questionnaires in two stages: one set of questionnaires at the beginning of the study and another set approximately 2-3 months after the new system has been introduced. These will be provided to you by the researcher and you will have a period of one week to complete them and return them to the researcher.

You may be required to engage in some new duties as part of your daily job, which are likely to include training regarding behaviour support plans, data collection and feedback sessions with your manager. Your manager will give you prior notice of any changes and discuss these duties with you.

Finally, you may be randomly selected to be observed by the researcher during your day to day job, implementing the behaviour support plans.

#### **What are the advantages of taking part?**

By taking part in the study you will be contributing to research which aims to strengthen the human services field. You will also gain knowledge and insight into behaviour support and how to accurately

implement interventions, which will be beneficial to your day to day working life and will have a direct impact on the quality of life of the individuals you support. As this is a pilot study it is likely to inform further study that will feed into changes across the organisation.

**What are the possible disadvantages of taking part?**

It may be time consuming to complete the questionnaires. Some people find it uncomfortable to be observed in the work place, but it is important to be aware the researcher will not feedback any information on individual staff members to managers or clinicians unless a safe-guarding issue is observed. We hope you do not find it upsetting but can stop whenever you want.

**Do I have to take part?**

No. Your participation in the study is entirely voluntary. However, expectations as part of your typical role will change as the organisation adopts the new structure and you will be required to take part in some elements of this as part of your typical role such as training and feedback. However, if you do not want to take part in the research study, you will not be required to take part in observations, complete questionnaires or engage in any of the researcher's data collection. For LOCATION to qualify for the study at least 90% of the front-line staff, the residential manager and the clinician need to provide consent to take part. If this criterion is not reached, another house will be approached. If you do decide to take part you are still free to withdraw at any time, without giving a reason and your data will not be included in the study.

All participants have the right to complain at any time if they feel they have been treated badly or unfairly by the researchers. It is advised that in the first instance the participant should seek to resolve the complaint with researchers themselves. If this is not appropriate or they are still not satisfied, they should contact the researcher supervisor, Ciara Padden or Peter McGill. If they remain unsatisfied, they can complain to the Secretary of the Tizard Ethics Committee, Jo Ruffels (Email: [J.Ruffels@kent.ac.uk](mailto:J.Ruffels@kent.ac.uk), Tel.: 01227827955).

**Will what I say in this study be kept confidential?**

Yes. All material and data gathered during this research will be treated as confidential and securely stored. Only the researcher and her supervisors will have access to the information and it will not be shared. You will not be identifiable in any reports of the study. Information about individual staff members will remain confidential, unless a safeguarding issue is observed by the researcher. In this case the researcher will follow [ORGANISATION NAMES'S] safeguarding policy and report the issue to the line manager.

**What will happen to the results of the research study?**

The results will be used as part of a PhD thesis which the researcher will submit for her final grading. There is a possibility that the findings will be published and presented at conferences. At the end of the study will send you a summary of the findings. Again, no individuals will be identifiable.

**Who is organising this research?**

Research is being conducted as part of a PhD study with the University of Kent at Canterbury. Supervisor details can be found below.

**Contact**

Please do not hesitate to contact Lucy Brady or the supervising team if you have any queries.

Dr. Ciara Padden: [c.m.padden@kent.ac.uk](mailto:c.m.padden@kent.ac.uk); +44 1227 824640

Prof. Peter McGill: [P.McGill@kent.ac.uk](mailto:P.McGill@kent.ac.uk); +44 1227 823838

Lucy Brady: 0834852986

If you wish to take part, please complete the consent form attached to this information sheet.

*Thank you for taking the time to read this.*

## Appendix J: Manager information sheet (Chapter 4)

Tizard Centre, University of Kent Canterbury,  
Kent, CT2 7LZ  
Lucy Brady, PhD Candidate  
Email: lmb47@kent.ac.uk  
Phone: 0834852986



### **Participant Information Sheet: Manager**

**Research title:** Increasing procedural fidelity of behavioural interventions: A pilot study.

Dear X,

As the manager working in [Organisation name] you are being invited to take part in a research study conducted by Lucy Brady as part of her PhD at the Tizard Centre, University of Kent. Your participation in this study is entirely voluntary. Before you decide whether you want to continue to participate it is important for you to understand why the research is being conducted and what it will involve.

**What is procedural fidelity?** Procedural fidelity is the accuracy with which behaviour support plans and other interventions are carried out.

**What is the purpose of this study?**

The purpose of this study is to increase the level of procedural fidelity of behaviour interventions carried out by front-line staff in residential services.

**What would I have to do if I agree to take part?**

If you agree to take part, you will be asked to complete a small number of questionnaires in two stages: one set of questionnaires at the beginning of the study and another set approximately 2-3 months after the new system has been introduced. These will be provided to you by the researcher and you will have a period of one week to complete them and return them to the researcher.

You will collaborate with the researcher to develop an adapted Periodic Service Review that is tailored to [Organisation name]. You will also collaborate with the researcher to meet the standards set out in the adapted procedure for how [Organisation Name] provides behavioural support. This will include attending training, observing staff and providing feedback to staff. You will be involved in delivering training to front line staff on how to implement the support plans. The researcher will observe you twice (once at beginning of the study and once at the end) in your day-to-day job in order to complete the Observed Measure of Practice Leadership (Beadle-Brown et al. 2015). The outcomes of this will be shared with you. Finally, you may be randomly selected to be observed by the researcher during your day to day job, implementing the behaviour support plans.

**What are the advantages of taking part?**

By taking part in the study you will be contributing to research which aims to strengthen the human services field. You will also gain knowledge and insight into behaviour support and how to accurately implement interventions, which will be beneficial to your day to day working life and will have a direct impact on the quality of life of the individuals you support. As this is a pilot study it is likely to inform further study that will feed into changes across the organisation.

**What are the possible disadvantages of taking part?**

It may be time consuming to complete the questionnaires. Some people find it uncomfortable to be observed in the work place, but it is important to be aware the researcher will not feedback any information on individual staff members to senior management unless a safe-guarding issue is observed. We hope you do not find it upsetting but can stop whenever you want.

**Do I have to take part?**

No. Your participation in the study is entirely voluntary. If you do decide to take part you are still free to withdraw at any time, without giving a reason and your answers will not be included in the study. For LOCATION to qualify for the study at least 90% of the front-line staff, the residential manager and the clinician need to provide consent to take part. If this criterion is not reached, another house will be approached. All participants have the right to complain at any time if they feel they have been treated badly or unfairly by the researchers. It is advised that in the first instance the participant should seek to resolve the complaint with researchers themselves. If this is not appropriate or they are still not satisfied, they should contact the researcher supervisor, Ciara Padden or Peter McGill. If they remain unsatisfied, they can complain to the Secretary of the Tizard Ethics Committee, Jo Ruffels (Email: [J.Ruffels@kent.ac.uk](mailto:J.Ruffels@kent.ac.uk), Tel.: 01227827955).

**Will what I say in this study be kept confidential?**

Yes. All material and data gathered during this research will be treated as confidential and securely stored. Only the researcher and her supervisors will have access to the information and it will not be shared. You will not be identifiable in any reports of the study. Information about individual staff members will remain confidential, unless a safeguarding issue is observed by the researcher. In this case the researcher will follow [ORGANISATION NAME] safeguarding policy and report the issue to the line manager.

**What will happen to the results of the research study?**

The results will be used as part of a PhD thesis which the researcher will submit for her final grading. There is a possibility that the findings will be published and presented at conferences. At the end of the study will send you a summary of the findings. Again, no individuals will be identifiable.

**Who is organising this research?**

Research is being conducted as part of PhD with the University of Kent at Canterbury. Supervisor details can be found below.

**Contact**

Please do not hesitate to contact Lucy Brady or the supervising team if you have any queries.  
Dr. Ciara Padden: [c.m.padden@kent.ac.uk](mailto:c.m.padden@kent.ac.uk); +44 1227 824640  
Prof. Peter McGill: [P.McGill@kent.ac.uk](mailto:P.McGill@kent.ac.uk); +44 1227 823838  
Lucy Brady; 00834852986

If you wish to take part, please complete the consent form attached to this information sheet.

***Thank you for taking the time to read this.***

## Appendix K: Clinician Information sheet (Chapter 4)

Tizard Centre, University of Kent Canterbury,  
Kent, CT2 7LZ  
Lucy Brady, PhD Candidate  
Email: lmb47@kent.ac.uk  
Phone: 0834852986



### **Participant Information Sheet: Clinician**

**Research title: Increasing procedural fidelity of behavioural interventions: A pilot study.**

Dear X,

As the Clinician working in LOCATION you are being invited to take part in a research study conducted by Lucy Brady as part of her PhD at the Tizard Centre, University of Kent.

Your participation in this study is entirely voluntary. Before you decide whether you want to continue to participate it is important for you to understand why the research is being conducted and what it will involve.

#### **What is procedural fidelity?**

Procedural fidelity is the accuracy with which behaviour support plans and other interventions are carried out.

#### **What is the purpose of this study?**

The purpose of this study is to increase the level of procedural fidelity of behaviour interventions carried out by front-line staff in residential services. Ensuring high levels of procedural fidelity in human services is a whole team effort. This study is focusing on changing the processes in place to maximise opportunity for high procedural fidelity. This is a pilot study that aims to explore not only how procedural fidelity can be increased, but maintained and generalised across service users, staff and settings. The findings are expected to inform a larger, organisation wide approach in the future across [Organisation Name].

#### **What would I have to do if I agree to take part?**

If you agree to take part, you will be asked to complete a small number of questionnaires in two stages: one set of questionnaires at the beginning of the study and another set approximately 2-3 months after the new system has been introduced. These will be provided to you by the researcher and you will have a period of one week to complete them and return them to the researcher.

You will collaborate with the researcher to develop an adapted Periodic Service Review that is tailored to [Organisation Name]. You will also collaborate with the researcher to meet the standards set out in the adapted procedure for how [Organisation Name] provides behavioural support. This might include modifying behaviour support plans or developing and delivering behavioural skills training to staff.

#### **What are the advantages of taking part?**

By taking part in the study you will be contributing to research which aims to strengthen the human services field. You will also support staff to gain knowledge and insight into behaviour support and how to accurately implement interventions, which will be beneficial to your day to day working life and will have a direct impact on the quality of life of the individuals you support. As this is a pilot study it is likely to inform further study that will feed into changes across the organisation.

**What are the possible disadvantages of taking part?**

It may be time consuming to complete the questionnaires and redesign the behaviour support plans. However, the researcher will be collaborating with you to make the work manageable and this system is likely to become part of how things work within ORGANISATION over time.

**Do I have to take part?**

No. Your participation in the study is entirely voluntary. If you do decide to take part you are still free to withdraw at any time, without giving a reason and your answers will not be included in the study. For LOCATION to qualify for the study at least 90% of the front-line staff, the residential manager and the clinician need to provide consent to take part. If this criterion is not reached, another house will be approached.

All participants have the right to complain at any time if they feel they have been treated badly or unfairly by the researchers. It is advised that in the first instance the participant should seek to resolve the complaint with researchers themselves. If this is not appropriate or they are still not satisfied, they should contact the researcher supervisor, Ciara Padden or Peter McGill. If they remain unsatisfied, they can complain to the Secretary of the Tizard Ethics Committee, Jo Ruffels ([J.Ruffels@kent.ac.uk](mailto:J.Ruffels@kent.ac.uk), 01227827955).

**Will what I say in this study be kept confidential?**

Yes. All material and data gathered during this research will be treated as confidential and securely stored. Only the researcher and her supervisors will have access to the information and it will not be shared. You will not be identifiable in any reports of the study. Information about individual staff members will remain confidential, unless a safeguarding issue is observed by the researcher. In this case the researcher will follow [ORGANISATION NAMES'S] safeguarding policy and report the issue to the line manager.

**What will happen to the results of the research study?**

The results will be used as part of a PhD thesis which the researcher will submit for her final grading. There is a possibility that the findings will be published and presented at conferences. At the end of the study will send you a summary of the findings. Again, no individuals will be identifiable.

**Who is organising this research?**

Research is being conducted as part of the researcher's PhD at the University of Kent at Canterbury. Supervisor details can be found below.

**Contact**

If you have any queries, please do not hesitate to contact Lucy Brady (Email: [lmb47@kent.ac.uk](mailto:lmb47@kent.ac.uk); Tel.: 0834852986) or the supervising team:

Dr. Ciara Padden: [c.m.padden@kent.ac.uk](mailto:c.m.padden@kent.ac.uk); +44 1227 824640

Prof. Peter McGill: [P.McGill@kent.ac.uk](mailto:P.McGill@kent.ac.uk); +44 1227 823838

If you wish to take part, please complete the consent form attached to this information sheet.

*Thank you for taking the time to read this.*

## Appendix L: Frontline consent form (Chapter 4)

Tizard Centre, University of Kent Canterbury,  
Kent, CT2 7LZ  
Lucy Brady, PhD Candidate  
Email: [lmb47@kent.ac.uk](mailto:lmb47@kent.ac.uk)  
Phone: 0834852986



### Participant Consent Sheet

**Research project title: Increasing procedural fidelity of behavioural interventions: A pilot study**

Thank you for considering taking part in the research. If you have any questions, please ask Lucy Brady before you decide whether to take part. You will be given a copy of this Consent Form to keep and refer to at any time.

Please tick

I confirm that I have read and understood the information sheet attached for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	<input type="checkbox"/>
I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason without my employment or legal rights being affected.	<input type="checkbox"/>
I understand that if I withdraw from the study the data collected up to that point will be destroyed.	<input type="checkbox"/>
I agree to take part in the following elements of the study:	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Completing two sets questionnaires: one set at beginning of study and one set 2-3 months after introduction of new system</li> </ul>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Working with the clinical, manager and researcher to meet the standards set out in the adapted procedures for how [Organisation Name] provides behavioural support (e.g., participating in training in implementing behaviour support plans; collecting data about behaviour; etc.)</li> </ul>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Being observed in day to day job by the researcher</li> </ul>	<input type="checkbox"/>

Name of Participant (please print) \_\_\_\_\_

Signed \_\_\_\_\_ Date \_\_\_\_\_

Name of Researcher (please print) \_\_\_\_\_

Signed \_\_\_\_\_ Date \_\_\_\_\_



## Appendix M: Manger consent form

Tizard Centre, University of Kent Canterbury,  
Kent, CT2 7LZ  
Lucy Brady, PhD Candidate  
Email: lmb47@kent.ac.uk  
Phone: 0834852986



### Participant Consent Sheet

**Research project title: Increasing procedural fidelity of behavioural interventions: A pilot study**

Thank you for considering taking part in the research. If you have any questions, please ask Lucy Brady before you decide whether to take part. You will be given a copy of this Consent Form to keep and refer to at any time.

Please tick

I confirm that I have read and understood the information sheet attached for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	
I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason without my employment or legal rights being affected.	
I understand that if I withdraw from the study the data collected up to that point will be destroyed.	
I agree to take part in the following elements of the study:	
<ul style="list-style-type: none"> <li>• Completing a small number of questionnaires: one set at beginning of study and one set 2-3 months after introduction of new system</li> </ul>	
<ul style="list-style-type: none"> <li>• Taking part in training for behaviour support plan with clinician</li> </ul>	
<ul style="list-style-type: none"> <li>• Collaborating with the researcher to meet the standards set out in the adapted procedure for how [Organisation Name] provides behavioural support (e.g., observing staff, providing feedback to staff; etc.)</li> </ul>	
<ul style="list-style-type: none"> <li>• Being observed in day to day job by the researcher</li> </ul>	

Name of Participant (please print) \_\_\_\_\_

Signed \_\_\_\_\_ Date \_\_\_\_\_

Name of Researcher (please print) \_\_\_\_\_

Signed \_\_\_\_\_ Date \_\_\_\_\_

## Appendix N: Clinician Consent form (Chapter 4)

Tizard Centre, University of Kent Canterbury,  
Kent, CT2 7LZ  
Lucy Brady, PhD Candidate  
Email: lmb47@kent.ac.uk  
Phone: 0834852986



### Participant Consent Sheet

**Research project title: Increasing procedural fidelity of behavioural interventions: A pilot study**

Thank you for considering taking part in the research. If you have any questions, please ask Lucy Brady before you decide whether to take part. You will be given a copy of this Consent Form to keep and refer to at any time.

Please tick

I confirm that I have read and understood the information sheet attached for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	
I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason without my employment or legal rights being affected.	
I understand that if I withdraw from the study the data collected up to that point will be destroyed.	
I agree to take part in the following elements of the study:	
<ul style="list-style-type: none"> <li>• Collaborating with the researcher to develop adapted Periodic Service Review</li> </ul>	
<ul style="list-style-type: none"> <li>• Completing a small number of questionnaires: one set at beginning of study and a second set 2-3 months after introduction of new system</li> </ul>	
<ul style="list-style-type: none"> <li>• Collaborating with the researcher to meet the standards set out in the adapted procedure for how [Organisation Name] provides behavioural support (e.g., modifying behaviour support plans; develop and delivering behavioural skills training to staff; etc.)</li> </ul>	
<ul style="list-style-type: none"> <li>• Allowing another person from outside the organisation to review the Behaviour Support Plans included in the study</li> </ul>	
<ul style="list-style-type: none"> <li>• Being observed in my day to day role by the researcher</li> </ul>	

Name of Participant (please print) \_\_\_\_\_

Signed \_\_\_\_\_ Date \_\_\_\_\_

Name of Researcher (please print) \_\_\_\_\_

Signed \_\_\_\_\_ Date \_\_\_\_\_

## Appendix O: Service user information sheet (Chapter 4)

*Tizard Centre, University of Kent Canterbury,  
Kent, CT2 7LZ  
Lucy Brady, PhD Candidate  
Email: lmb47@kent.ac.uk  
Phone: 0834852986*



### Service user information sheet

**Increasing procedural fidelity of behavioural interventions: A pilot study**

**My name is Lucy Brady**



**I am studying a PhD at the University of Kent**



**I am trying to find out what is the best way for staff  
to support people in their homes**



**I would like to speak with people who work with you  
in your house**

**I would like to talk to them about ways they  
support you**



**I would like to look at your support plan**



**Another person you don't know would like to  
look at your plan to see if anything is missing.  
I'll hide your name when they see it.**



**I would like to visit your house and see what it  
is like living there.**



**I would like to write down what I see in your  
House**



**I will use what I learn from visiting your  
house to help staff provide good support for you  
and other people like you.**



The information we collect may be published  
In a professional journal (a magazine for staff  
who work with people with intellectual disability)  
We will not say your name



I will keep the information I find for 5 years.  
I will keep it safe and private so no one can see it.



Everything I see will be kept private unless  
I see something bad happening that should be stopped:  
Then I'll tell the [fill in correct name according to company policy].



Shhhhh!

**You can say No to taking part in the research**

**Or you can change your mind at anytime**



**If anything happens that you don't like**

**You can complain to the researcher. If you're**

**Still unhappy contact Dr. Ciara Padden:**

**[c.m.padden@kent.ac.uk](mailto:c.m.padden@kent.ac.uk); +44 1227 824640 or**

**Prof. Peter McGill: [P.McGill@kent.ac.uk](mailto:P.McGill@kent.ac.uk); +44 1227 823838**



**If you are still not happy you can contact the Tizard Ethics Committee:**

**[J.Ruffels@kent.ac.uk](mailto:J.Ruffels@kent.ac.uk); +44 1227 827955**









## Appendix P: Service user consent form (Chapter 4)

Tizard Centre, University of Kent Canterbury,  
Kent, CT2 7LZ  
Lucy Brady, PhD Candidate  
Email: lmb47@kent.ac.uk  
Phone: 0834852986

**TIZARD**  
University of Kent

### Service user consent form

#### Increasing procedural fidelity of behavioural interventions: A pilot study

	Yes that's OK 	No that's not OK 
I had time to look at the information and ask questions about this.		
I understand the research information.		
I am happy for the researcher to:		
 Visit my house		
 Read my support plan and show it to one other person I don't know with my name hidden.		
 Show my support plan to one other researcher – with my name hidden – so he/she can review it.		
 Work with staff who support me in my house		
 Write down what she sees in my house		
 Use what she learns to help staff support me		

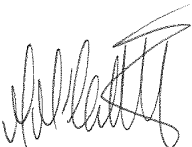
Signed \_\_\_\_\_ Date: \_\_\_\_\_

Supported by \_\_\_\_\_

## Appendix Q: Ethics approval form (Chapter 4)



## Tizard Ethics Feedback Form

<b>Student Name:</b>	Lucy Brady
<b>Supervisor:</b>	Dr Ciara Padden & Prof Peter McGill
<b>Title:</b>	<i>Increasing procedural fidelity of behavioural interventions: A pilot study</i>
<p>The Chair of the Tizard Ethics Committee has considered the amendments to the above proposal and confirms that this now has ethical approval.</p> <p><b>Signed: J.Ruffels</b> <b>Date: 19.02.18</b></p> <p><b>On behalf of Tizard Ethics Committee</b></p>	
<b>Alterations approved by Supervisor</b>	<p><i>Ciara Padden</i></p> <p><b>Signature</b> <b>Date 16/2/18</b></p>
<b>Final approval On behalf of Tizard Ethics Committee</b>	<p><b>Michelle McCarthy</b></p> <p></p> <p><b>Signature</b> <b>Date 16.2.18</b></p>



## Appendix R: Frontline Information sheet (Chapter 5)

Tizard Centre, University of Kent Canterbury,  
Kent, CT2 7LZ  
Lucy Brady, PhD Candidate  
Email: lmb47@kent.ac.uk  
Phone: 0834852986



### **Participant Information Sheet: Front line staff**

#### **Research title: Increasing procedural fidelity of behavioural interventions in human services**

Dear X,

As a front-line staff member working in [Organisation name] you are being invited to take part in a research study conducted by Lucy Brady as part of her PhD at the Tizard Centre, University of Kent.

Your participation in this study is entirely voluntary. Before you decide whether you want to continue to participate it is important for you to understand why the research is being conducted and what it will involve.

#### **A brief introduction:**

The researcher will be working with [Organisation name] to adapt the systems in place for developing and monitoring behaviour support plans. Some aspects of how you carry out your role may change, including things like taking part in training regarding behaviour support plans or collecting data. These tasks will become part of your typical duties within [Organisation name]. The researcher intends to collect data before and after the introduction of the new system to evaluate its effectiveness before carrying out a study with the whole organisation.

#### **What is procedural fidelity?**

Procedural fidelity is the accuracy with which behaviour support plans and other interventions are carried out.

#### **What is the purpose of this study?**

The purpose of this study is to increase the level of procedural fidelity of behaviour interventions carried out by front-line staff in residential services. Ensuring high levels of procedural fidelity in human services is a whole team effort. This study is focusing on changing the processes in place to maximise opportunity for high procedural fidelity. This study aims to explore not only how procedural fidelity can be increased, but maintained and generalised across service users, staff and settings.

#### **What would I have to do if I agree to take part?**

If you agree to take part, you will be asked to complete a small number of questionnaires in two stages: one set of questionnaires at the beginning of the study and another set approximately 2-3 months after the new system has been introduced. These will be provided to you by the researcher and you will have a period of one week to complete them and return them to the researcher.

You may be required to engage in some new duties as part of your daily job, which are likely to include training regarding behaviour support plans, data collection and feedback sessions with your manager. Your manager will give you prior notice of any changes and discuss these duties with you.

Finally, you may be randomly selected to be observed by the researcher during your day to day job, implementing the behaviour support plans. Information gathered during these observations will be for the purposes of the study only and will not be shared with the managerial team.

#### **What are the advantages of taking part?**

By taking part in the study you will be contributing to research which aims to strengthen the human services field. You will also gain knowledge and insight into behaviour support and how to accurately implement interventions, which will be beneficial to your day to day working life and will have a direct impact on the quality of life of the individuals you support.

**What are the possible disadvantages of taking part?**

It may be time consuming to complete the questionnaires. Some people find it uncomfortable to be observed in the work place, but it is important to be aware the researcher will not feedback any information on individual staff members to managers or clinicians unless a safe-guarding issue is observed. We hope you do not find it upsetting but can stop whenever you want.

**Do I have to take part?**

No. Your participation in the study is entirely voluntary. However, expectations as part of your typical role will change as the organisation adopts the new structure and you will be required to take part in some elements of this as part of your typical role such as training and feedback. However, if you do not want to take part in the research study, you will not be required to take part in observations, complete questionnaires or engage in any of the researcher's data collection. For LOCATION to qualify for the study at least 90% of the front-line staff, the residential manager and the clinician need to provide consent to take part. If this criterion is not reached, another house will be approached. If you do decide to take part you are still free to withdraw at any time, without giving a reason and your data will not be included in the study.

All participants have the right to complain at any time if they feel they have been treated badly or unfairly by the researchers. It is advised that in the first instance the participant should seek to resolve the complaint with researchers themselves. If this is not appropriate or they are still not satisfied, they should contact the researcher supervisor, Ciara Padden or Peter McGill. If they remain unsatisfied, they can complain to the Secretary of the Tizard Ethics Committee, Jo Ruffels (Email: [J.Ruffels@kent.ac.uk](mailto:J.Ruffels@kent.ac.uk), Tel.: 01227827955).

**Will what I say in this study be kept confidential?**

Yes. All material and data gathered during this research will be treated as confidential and securely stored. Only the researcher and her supervisors will have access to the information and it will not be shared. You will not be identifiable in any reports of the study. Information about individual staff members will remain confidential, unless a safeguarding issue is observed by the researcher. In this case the researcher will follow [ORGANISATION NAME] safeguarding policy and report the issue to the line manager.

**What will happen to the results of the research study?**

The results will be used as part of a PhD thesis which the researcher will submit for her final grading. There is a possibility that the findings will be published and presented at conferences. At the end of the study will send you a summary of the findings. Again, no individuals will be identifiable.

**Who is organising this research?**

Research is being conducted as part of a PhD study with the University of Kent at Canterbury. Supervisor details can be found below.

**Contact**

Please do not hesitate to contact Lucy Brady or the supervising team if you have any queries.

Dr. Ciara Padden: [c.m.padden@kent.ac.uk](mailto:c.m.padden@kent.ac.uk); +44 1227 824640

Prof. Peter McGill: [P.McGill@kent.ac.uk](mailto:P.McGill@kent.ac.uk); +44 1227 823838

Lucy Brady: [lmb47@kent.ac.uk](mailto:lmb47@kent.ac.uk) 0834852986

If you wish to take part, please complete the consent form attached to this information sheet.

*Thank you for taking the time to read this.*

## Appendix S: Manager information sheet (Chapter 5)

Tizard Centre, University of Kent Canterbury,  
Kent, CT2 7LZ  
Lucy Brady, PhD Candidate  
Email: [lmb47@kent.ac.uk](mailto:lmb47@kent.ac.uk)  
Phone: 0834852986



### **Participant Information Sheet: Manager**

**Research title: Increasing procedural fidelity of behavioural interventions in human services.**

Dear Sonja,

As the manager working in SMH you are being invited to take part in a research study conducted by Lucy Brady as part of her PhD at the Tizard Centre, University of Kent. Your participation in this study is entirely voluntary. Before you decide whether you want to continue to participate it is important for you to understand why the research is being conducted and what it will involve.

**What is procedural fidelity?** Procedural fidelity is the accuracy with which behaviour support plans and other interventions are carried out.

**What is the purpose of this study?**

The purpose of this study is to increase the level of procedural fidelity of behaviour interventions carried out by front-line staff in residential services.

**What would I have to do if I agree to take part?**

If you agree to take part, you will be asked to complete a small number of questionnaires in two stages: one set of questionnaires at the beginning of the study and another set approximately 2-3 months after the new system has been introduced. These will be provided to you by the researcher and you will have a period of one week to complete them and return them to the researcher.

You will collaborate with the researcher to develop an adapted Periodic Service Review that is tailored to SMH. You will also collaborate with the researcher to meet the standards set out in the adapted procedure for how SMH provides behavioural support. This will include attending training, observing staff and providing feedback to staff. You will be involved in delivering training to front line staff on how to implement the support plans. The researcher will observe you twice (once at beginning of the study and once at the end) in your day-to-day job in order to complete the Observed Measure of Practice Leadership (Beadle-Brown et al. 2015). The outcomes of this will be shared with you. Finally, you may be randomly selected to be observed by the researcher during your day to day job, implementing the behaviour support plans.

**What are the advantages of taking part?**

By taking part in the study you will be contributing to research which aims to strengthen the human services field. You will also gain knowledge and insight into behaviour support and how to accurately implement interventions, which will be beneficial to your day to day working life and will have a direct impact on the quality of life of the individuals you support.

**What are the possible disadvantages of taking part?**

It may be time consuming to complete the questionnaires. Some people find it uncomfortable to be observed in the work place, but it is important to be aware the researcher will not feedback any

information on individual staff members to senior management unless a safe-guarding issue is observed. We hope you do not find it upsetting but can stop whenever you want.

**Do I have to take part?**

No. Your participation in the study is entirely voluntary. If you do decide to take part you are still free to withdraw at any time, without giving a reason and your answers will not be included in the study. For your house to qualify for the study at least 90% of the front-line staff, the residential manager and the clinician need to provide consent to take part. If this criterion is not reached, another house will be approached. All participants have the right to complain at any time if they feel they have been treated badly or unfairly by the researchers. It is advised that in the first instance the participant should seek to resolve the complaint with researchers themselves. If this is not appropriate or they are still not satisfied, they should contact the researcher supervisor, Ciara Padden or Peter McGill. If they remain unsatisfied, they can complain to the Secretary of the Tizard Ethics Committee, Jo Ruffels (Email: [J.Ruffels@kent.ac.uk](mailto:J.Ruffels@kent.ac.uk), Tel.: 01227827955).

**Will what I say in this study be kept confidential?**

Yes. All material and data gathered during this research will be treated as confidential and securely stored. Only the researcher and her supervisors will have access to the information and it will not be shared. You will not be identifiable in any reports of the study. Information about individual staff members will remain confidential, unless a safeguarding issue is observed by the researcher. In this case the researcher will follow SMH safeguarding policy and report the issue to the line manager.

**What will happen to the results of the research study?**

The results will be used as part of a PhD thesis which the researcher will submit for her final grading. There is a possibility that the findings will be published and presented at conferences. At the end of the study will send you a summary of the findings. Again, no individuals will be identifiable.

**Who is organising this research?**

Research is being conducted as part of PhD with the University of Kent at Canterbury. Supervisor details can be found below.

**Contact**

Please do not hesitate to contact Lucy Brady or the supervising team if you have any queries.  
Dr. Ciara Padden: [c.m.padden@kent.ac.uk](mailto:c.m.padden@kent.ac.uk); +44 1227 824640  
Prof. Peter McGill: [P.McGill@kent.ac.uk](mailto:P.McGill@kent.ac.uk); +44 1227 823838  
Lucy Brady; [lmb47@kent.ac.uk](mailto:lmb47@kent.ac.uk) 0834852986

If you wish to take part, please complete the consent form attached to this information sheet.

*Thank you for taking the time to read this.*

## Appendix T: Service manager information sheet (Chapter 5)

Tizard Centre, University of Kent Canterbury,  
Kent, CT2 7LZ  
Lucy Brady, PhD Candidate  
Email: lmb47@kent.ac.uk  
Phone: 0834852986



### **Participant Information Sheet: Service Manager**

**Research title: Increasing procedural fidelity of behavioural interventions in human services.**

Dear X,

As the service manager working in [Organisation name] you are being invited to take part in a research study conducted by Lucy Brady as part of her PhD at the Tizard Centre, University of Kent. Your participation in this study is entirely voluntary. Before you decide whether you want to continue to participate it is important for you to understand why the research is being conducted and what it will involve.

**What is procedural fidelity?** Procedural fidelity is the accuracy with which behaviour support plans and other interventions are carried out.

**What is the purpose of this study?**

The purpose of this study is to increase the level of procedural fidelity of behaviour interventions carried out by front-line staff in residential services.

**What would I have to do if I agree to take part?**

If you agree to take part, you will be asked to complete a small number of questionnaires in two stages: one set of questionnaires at the beginning of the study and another set approximately 2-3 months after the new system has been introduced. These will be provided to you by the researcher and you will have a period of one week to complete them and return them to the researcher.

You will collaborate with the researcher to develop incentives for front-line staff to achieve targets and goals related to the behaviour support plan. You will be responsible for delivering these incentives when staff achieve their goals. You will attend training with front line staff on how to implement behaviour support plans, observing staff and providing feedback to staff. You will deliver training in how to provide feedback to front-line staff to the front-line manager. You will provide ongoing support and feedback to the front-line manager in relation to the delivery of feedback and practice leadership.

**What are the advantages of taking part?**

By taking part in the study you will be contributing to research which aims to strengthen the human services field. You will also gain knowledge and insight into behaviour support and how to accurately implement interventions, which will be beneficial to your day to day working life and will have a direct impact on the quality of life of the individuals you support.

**What are the possible disadvantages of taking part?**

It may be time consuming to complete the questionnaires. It may be difficult to source incentives to motivate staff due to organisational restrictions. The researcher will collaborate with you to find meaningful rewards which will be easy to deliver and economically viable.

**Do I have to take part?**

No. Your participation in the study is entirely voluntary. If you do decide to take part you are still free to withdraw at any time, without giving a reason and your answers will not be included in the study. For LOCATION to qualify for the study at least 90% of the front-line staff, the residential manager and the clinician need to provide consent to take part. If this criterion is not reached, another house will be approached. All participants have the right to complain at any time if they feel they have been treated badly or unfairly by the researchers. It is advised that in the first instance the participant should seek to resolve the complaint with researchers themselves. If this is not appropriate or they are still not satisfied, they should contact the researcher supervisor, Ciara Padden or Peter McGill. If they remain unsatisfied, they can complain to the Secretary of the Tizard Ethics Committee, Jo Ruffels (Email: [J.Ruffels@kent.ac.uk](mailto:J.Ruffels@kent.ac.uk), Tel.: 01227827955).

**Will what I say in this study be kept confidential?**

Yes. All material and data gathered during this research will be treated as confidential and securely stored. Only the researcher and her supervisors will have access to the information and it will not be shared. You will not be identifiable in any reports of the study. Information about individual staff members will remain confidential, unless a safeguarding issue is observed by the researcher. In this case the researcher will follow [ORGANISATION NAME] safeguarding policy and report the issue to the line manager.

**What will happen to the results of the research study?**

The results will be used as part of a PhD thesis which the researcher will submit for her final grading. There is a possibility that the findings will be published and presented at conferences. At the end of the study will send you a summary of the findings. Again, no individuals will be identifiable.

**Who is organising this research?**

Research is being conducted as part of PhD with the University of Kent at Canterbury. Supervisor details can be found below.

**Contact**

Please do not hesitate to contact Lucy Brady or the supervising team if you have any queries.

Dr. Ciara Padden: [c.m.padden@kent.ac.uk](mailto:c.m.padden@kent.ac.uk); +44 1227 824640

Prof. Peter McGill: [P.McGill@kent.ac.uk](mailto:P.McGill@kent.ac.uk); +44 1227 823838

Lucy Brady; [lmb47@kent.ac.uk](mailto:lmb47@kent.ac.uk) 0834852986

If you wish to take part, please complete the consent form attached to this information sheet.

***Thank you for taking the time to read this.***

## Appendix U: Service manager consent form (Chapter 5)

Tizard Centre, University of Kent Canterbury,  
Kent, CT2 7LZ  
Lucy Brady, PhD Candidate  
Email: lmb47@kent.ac.uk  
Phone: 0834852986



### Participant Consent Sheet

**Research project title: Increasing procedural fidelity of behavioural interventions in human services**

Thank you for considering taking part in the research. If you have any questions, please ask Lucy Brady before you decide whether to take part. You will be given a copy of this Consent Form to keep and refer to at any time.

	Please tick
I confirm that I have read and understood the information sheet attached for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	
I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason without my employment or legal rights being affected.	
I understand that if I withdraw from the study the data collected up to that point will be destroyed.	
I agree to take part in the following elements of the study:	
<ul style="list-style-type: none"> <li>• Completing a small number of questionnaires: one set at beginning of study and one set 2-3 months after introduction of new system</li> </ul>	
<ul style="list-style-type: none"> <li>• Taking part in training for behaviour support plan with clinician</li> </ul>	
<ul style="list-style-type: none"> <li>• Collaborating with the researcher to develop incentives for front-line staff and delivering incentives when targets are reached.</li> </ul>	
<ul style="list-style-type: none"> <li>• Providing support and feedback to front-line manager</li> </ul>	

Name of Participant (please print) \_\_\_\_\_

Signed \_\_\_\_\_ Date \_\_\_\_\_


Name of Researcher (please print) \_\_\_\_\_

Signed \_\_\_\_\_ Date \_\_\_\_\_

## Appendix V: Ethics approval form (Chapter 5)



### Tizard Ethics Feedback Form

<b>Student Name:</b>	Lucy Brady
<b>Supervisor:</b>	Dr Ciara Padden and Prof Peter McGill
<b>Title:</b>	<i>Increasing procedural fidelity of behavioural interventions in residential services for adults with intellectual disabilities.</i>
<p>The Chair of the Tizard Ethics Committee has considered the amendments to the above proposal and confirms that ethical approval has now been given.</p> <p><b>Signed: J.Ruffels</b> <b>Date: 07.03.19</b></p> <p><b>On behalf of Tizard Ethics Committee</b></p>	
<b>Alterations approved by Supervisor</b>	<p><i>Ciara Padden</i></p> <p><b>Signature</b> <b>Date 6.3.19</b></p>
<b>Final approval On behalf of Tizard Ethics Committee</b>	<p></p> <p><b>Michelle McCarthy</b></p> <p><b>Signature</b> <b>Date 06.03.19</b></p>



**Appendix W: Full breakdown of observational practice leadership scores pre-intervention and post-intervention: Study 3 (Chapter 5)**

	Pre-intervention	Post-intervention
PIC 1	12	21
Deputy PIC 1	14	20
PIC 2	18	23
Deputy PIC 2	17	23
PIC 3	8	18
Deputy PIC 3	7	19

### Appendix X: Full breakdown of BPI measure scores: Study 3 (Chapter 5)

		Frequency		Severity	
		Pre-intervention	Post-intervention	Pre-intervention	Post-intervention
Charlie	SIB	15	10	3	2
	Stereotypy	16	16	10	10
	Aggression	5	3	10	12
Mark	SIB	22	10	20	9
	Stereotypy	22	15	16	8
	Aggression	5	1	3	1
Steven	SIB	22	22	15	20
	Stereotypy	17	20	12	17
	Aggression	6	4	3	8
Maria	SIB	0	0	0	0
	Stereotypy	6	5	3	2
	Aggression	2	0	5	1
Alan	SIB	5	5	3	2
	Stereotypy	19	18	4	2
	Aggression	2	1	8	7
Taran	SIB	1	1	1	1
	Stereotypy	0	0	0	0
	Aggression	19	3	18	17
Mary	SIB	1	1	1	1
	Stereotypy	0	0	0	0
	Aggression	22	3	19	12
Robert	SIB	23	12	22	13
	Stereotypy	23	20	18	8
	Aggression	2	1	5	5
Peter	SIB	10	4	3	3
	Stereotypy	18	15	8	8
	Aggression	3	3	9	10
Tom	SIB	5	3	4	4
	Stereotypy	16	7	3	2
	Aggression	7	2	11	5

### Appendix Y: Full breakdown of BSPQE-II scores: Study 3 (Chapter 5)

	Willie		Shane		Dennis		Sandra		Neil		Patricia		Sharon		Gary		John		Patrick	
	Pre-I	Post-I	Pre-I	Post-I	Pre-I	Post-I	Pre-I	Post-I	Pre-I	Post-I	Pre-I	Post-I	Pre-I	Post-I	Pre-I	Post-I	Pre-I	Post-I	Pre-I	Post-I
Problem behaviour	1	2	2	2	1	2	1	2	2	2	2	2	2	2	2	2	1	2	1	2
Predictors of behaviour	0	2	1	2	1	2	1	2	2	2	2	2	2	2	0	2	1	2	0	1
Analysing what is support problem behaviour	1	1	2	2	1	2	1	1	2	2	2	2	2	2	0	2	1	2	0	1
Environmental changes	0	2	1	2	1	2	1	1	2	2	1	2	2	2	1	2	2	2	1	2
Predictors related to function	0	1	0	1	0	2	1	2	2	2	1	2	1	2	0	2	2	2	0	1
Function related to replacement behaviours	0	1	0	2	0	2	0	1	2	2	2	2	2	2	0	2	1	1	0	2
Teaching strategies	0	1	0	2	1	2	0	1	2	2	2	2	2	2	0	1	1	2	1	2
Reinforcement	0	2	1	2	0	2	1	2	2	2	1	2	1	2	0	2	1	2	1	2
Reactive strategies	0	2	1	2	0	2	1	2	2	2	1	2	1	2	1	2	1	2	1	2
Goals and objectives	0	2	1	2	1	1	1	2	2	2	2	2	2	2	1	2	0	1	2	2
Team coordination	0	1	0	1	1	2	0	2	2	2	2	2	2	2	0	1	1	1	1	1
Communication	0	1	0	1	0	1	1	1	1	1	1	1	1	1	0	2	1	1	0	1
<b>Total score</b>	<b>2</b>	<b>18</b>	<b>9</b>	<b>21</b>	<b>7</b>	<b>22</b>	<b>9</b>	<b>19</b>	<b>23</b>	<b>23</b>	<b>19</b>	<b>23</b>	<b>20</b>	<b>23</b>	<b>5</b>	<b>22</b>	<b>13</b>	<b>20</b>	<b>8</b>	<b>19</b>
<b>Rating*</b>	<b>WP</b>	<b>GP</b>	<b>WP</b>	<b>GP</b>	<b>WP</b>	<b>SP</b>	<b>WP</b>	<b>GP</b>	<b>SP</b>	<b>SP</b>	<b>GP</b>	<b>SP</b>	<b>GP</b>	<b>SP</b>	<b>WP</b>	<b>SP</b>	<b>UP</b>	<b>GP</b>	<b>WP</b>	<b>GP</b>