An examination of the implementation of setting-wide positive behaviour support in an adult disability residential setting

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A thesis submitted to Trinity College Dublin, the University of Dublin, in partial fulfillment of the requirements for the Degree of Doctor of Philosophy (PhD) in Psychology

2023

Supervisor: Dr. Olive Healy (Trinity College Dublin)
Declaration

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Summary

Positive Behaviour Support, or PBS, is mandated in Ireland under the Health Act 2007 as an evidence-based practice for vulnerable adults in residential settings. However, it is not considered to be implemented in a consistent manner across service providers, nor is it uniformly available as evidenced in the Joint Committee on Disability Matters report (Joint Committee on Disability Matters, 2022). The latest advancement in PBS is referred to as Service-wide PBS, constituting a multi-tiered framework focused on establishing a proactive, positive culture of support to enrich quality of life and ease distressed behaviours for all individuals in an organisation (Freeman et al., 2005; McGill et al., 2018). The empirical study of this systemic framework with adult populations is still considered to be in very early stages, particularly in Ireland. The aim of this research programme was to use robust empirical methodologies to investigate the implementation of setting-wide PBS in a community-based residential setting for adults with ID.

Chapter 1 provides a historical overview of disability service provision in Ireland. Multi-tiered, or setting wide PBS, an advancement in the PBS model is illustrated, along with evidenced methods to address the theory to practice gap often experienced in disability service provision. Chapter 2 presents a systematic literature review of published research to date on setting-wide PBS in adult settings. Synthesised results evidenced that empirical explorations of the model in adult settings were scant to date, though positive outcomes for both participants with ID and direct support staff were consistently reported. Notably, all included studies incorporated a workforce development programme in their intervention.

Chapter 3 describes the development of a manual for a workforce development programme in tier 1 setting-wide PBS for direct support staff, based on the findings from Chapter 2, and published training standards in the literature. Chapter 4 investigates the implementation of tier 1 setting-wide PBS in an adult disability setting adopting a
randomised control trial (RCT). Significant methodological challenges were encountered during the investigation due to the impact of Covid-19 restrictions. However, results evidenced that the programme successfully increased knowledge of tier 1 setting-wide PBS concepts in staff, but no further statistically significant outcomes were observed for participants. Implementation data suggests that behavioural skills training and coaching elements of the workforce development programme are key elements and necessitate further investigation. Chapter 5 presents a process evaluation of the methodological challenges, decisions made, and lessons learned during the RCT, to provide vital information to enhance the understanding of the findings in Chapter 4. A summary of potential solutions to the challenges encountered is given, which highlights important future research spheres.

A qualitative investigation of the enablers and barriers encountered by staff that participated in the workforce development programme is provided in Chapter 6. The investigation adopted an implementation science framework, known as the COM-B model, which poses that capacity, opportunity and motivation must be present for behaviour change to occur. Responses indicated the significance of staff relationship with the people they support, skill mix and experience in teams, effective supervision and the impact of high workloads, turnover, and redeployments on bridging the theory to practice gap.

In Chapter 7, an implementation roadmap for setting-wide PBS in adult disability settings is provided. A significant finding of the current research programme is that implementation of innovation involves sustained commitment and must be considered as a process. The chapter discusses the significance of this roadmap in the context of limited budgets, regulatory requirements, and resource issues in the field of disability service provision for adults in Ireland. The need for further research investigating the use of this roadmap, with the other contributions from the research programme such as the
workforce development manual are described.
Funding

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I would like to thank the service users and staff in St. Patricks Centre (SPC) Kilkenny for expediting this employment-based postgraduate award programme. The past number of years have been hugely challenging for the service as they navigated decongregation, restructures and then the covid-19 pandemic. The team are committed to supporting and enriching the lives of the people they support, and hopefully the outcomes of this research programme contribute to this progression.

Finally, I wish to acknowledge the diligence and commitment of Shannon Sinnott as research assistant on this programme, the wider team in Trinity College Dublin School of Psychology, and the library team. Your collaboration enriched the implementation and outcomes of this research programme, thank you.
Conference Proceedings Arising From this Thesis

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Chapter 1

Introduction
People with intellectual disabilities (ID) are amongst the most marginalised people in Ireland (Agmon et al., 2016). While the United Nations Convention on the Rights of Persons with Disabilities was adopted in 2006, it has taken a further 12 years for it to be ratified in Ireland. The Assisted Decision-Making (Capacity) Act (ADMC) was passed into law in Ireland in December 2015. This act upholds the right of all people to make choices for themselves, and therefore it has particular significance for people who may struggle to express or communicate their choices. To date, this law has yet to be fully commenced in Ireland (Health Service Authority, 2021). “Historically, persons with intellectual disabilities have been denied the right to live in the community, marry, procreate, work, receive an education, and, in some cases, to receive life-saving medical treatment. They have been subjected to incarceration, sterilization, overmedication, and cruel or unusual punishment” (Griffiths et al., 2006, pp. 25–26). The body responsible for monitoring the safety and quality of health and social care systems in Ireland is the Health Information and Quality Authority (HIQA). In a recent review of published inspection reports, Murphy and Bantry-White (2020) identified 4825 human rights violations, concluding that people with intellectual disabilities are yet to be regarded as equal citizens capable of being fully included in Irish society. What is going wrong? To explore this question, the current chapter will firstly look at models of practice in disability, their influence on service provision and the difficulties experienced by people with ID in the Irish context. Evidence for what is referred to as the theory to practice gap will then be introduced, emphasising important questions for future research in the field of disability service provision within an Irish context.

Medical Model of Intellectual Disability Practice

There is a marked dichotomy in the meaning of disability in the literature over the last 50 years ((Haegele & Hodge, 2016; LoBianco & Sheppard-Jones, 2007). The two
main paradigms have been the medical and the social model of disability (LoBianco & Sheppard-
Jones, 2007). The perspective adopted by the medical model, is of disability as an individual or medical diagnosis or deficiency (Areheart, 2008; Bingham et al., 2013) with a primary focus on diagnosis and rehabilitation (Dirth & Branscombe, 2017).

Historically, this model of disability has significantly influenced practice in Ireland, with many people being moved to institutional settings for “care” or “treatment” (Sheerin, 1998). Disability settings were mainly managed by medical or nursing personnel (Humpage, 2007). Some disabilities (i.e., intellectual disabilities) cannot be ‘fixed’ using medical interventions, resulting in a view of persons as recipients of care or charity (Roush & Sharby, 2011). A critique of this model is that it is said to be deterministic and dehumanising and suggests that a disability diagnosis inherently signifies inequality (Parchomiuk, 2013) and that adults are sometimes perceived as inherently devoid of agency (Johnson, Lincoln & Cumming, 2020). Families can have low expectations of available services and can experience significant worry for the future of their loved ones (Gillan & Coughlan, 2010; Hubert, 2011; Griffith & Hastings, 2014). A further drawback is that this view of disability has led to medical personnel becoming “gatekeepers”, employing specific diagnostic labels to determine who can access clinical services and what services are available (Humpage, 2007). This may, in part, account for the significant rise in autism diagnosis for example in Ireland, and indeed globally, over the past number of years (Health Analytics Division and CMO Division, 2018). It has been highlighted that the model also neglects to take into consideration an individual’s personal values and goals in life (Haegel & Hodge, 2016).

**Social Model of Intellectual Disability Practice**

The social model of disability emerged from the human-rights movement and determines that disability is a direct result of social, economic, and environmental barriers, rather than an individual issue (Burchardt, 2004). This model recommends a social solution – namely political deeds and social change (Haegel & Hodge, 2016). It
provides an
opportunity to develop an understanding of disability as ‘diversity’, and therefore
something to be respected and commemorated (Roush & Sharby, 2011). There has been
a slow and gradual shift towards this model of disability in Ireland, evident in the launch
of the National Disability Strategy (NDS) in 2004, which was firmly grounded in this
social construct. The CRPD was adopted in 2006 and signed by the Irish government in
2007. The article addresses multiple life functioning domains, such as education, health,
and employment (United Nations, 2006). These life domains reflect similar underlying
values to the Quality of Life (QOL) construct (Buntinx & Schalock, 2010) which is
commonly identified as the goal or expected outcome for disability service provision
(Beadle-Brown et al., 2016; Chowdhury & Benson, 2011)

**Quality of Life Model of Intellectual Disability Practice**

The QOL concept explores essential aspects of an individual’s life situation for
the purpose of enhancing and evaluating personal outcomes (Buntinx & Schalock, 2010).
Despite a growth in the application of QOL models and assessments in research,
professional practice and policy development, there remains little consensus with regards
to its definition (Van Hecke et al., 2018). The World Health Organisation Quality of Life
Group (WHOQOL) proposed a multi-dimensional QOL structure, incorporating three
broad fields: physical, psychological and social (WHO, 1997). Schalock and Keith
(2004) further developed a multidimensional QOL concept, comprising of eight core
domains: emotional well-being, interpersonal relations, material well-being, personal
development, physical well-being, self- determination, social inclusion, and rights. These
domains can be used to both identify and measure outcomes for individuals (Helm, 2003;
Schalock et al., 2018; Wang, Schalock, Verdugo, & Jenaro, 2010). The development of
the QOL construct and the close parallels with the CRPD have led to the widespread
adoption of an “individualised supports” approach
to the provision of services for people with disabilities (Buntinx & Schalock, 2010; van Loon et al., 2013).

**Person-Centred-Planning (PCP)**

Person-centred Planning (PCP) represents a category of approaches aimed at supporting people with ID to plan their lives and necessary supports (O'Brien & O'Brien, 1999). McCormack and Dewing (2019) describe 10 core features of person-centred approaches. These features include respect for the persons’ individual beliefs and values, articulation of personhood and its context, connected relationships that embody the value system of respect and reciprocity and a culture of positive risk taking. The model of person-centred care for vulnerable groups has also been recommended for healthcare providers to provide safe and effective care for persons with complex needs in health care settings (Kuluski, Reid, & Baker, 2020). When the model is implemented with fidelity, it can also promote greater job satisfaction and wellbeing among social care professionals (Van der Meer, Nieboer, Finkenflügel, & Cramm, 2018). Ratti and colleagues (2016) conducted a systematic literature review on the effectiveness of person-centred planning for people with ID. The results indicated positive impacts on a range of outcomes, including community participation, quality of life, involvement in meaningful activities and autonomy (Ratti et al., 2016). While this concept has been widely adopted by service providers, there is almost no evidence of its effectiveness in comparison to other approaches (Mansell & Beadle-Brown, 2004). Also, many implementation issues have been reported in the literature, including: a) issues related to resource constraints in service funding (McCausland, Murphy, McCallion, & McCarron, 2019); b) organisational factors such as recruitment procedures and management practices (Kozma, Mansell, & Beadle-Brown, 2009); c) individual risks involving difficulty translating the values into practice – with DSP struggling to support those with more complex needs (Emerson, Robertson, et al., 2001), and d) effective goal setting and transforming PCP.
goals into daily support work (Mansell & Beadle-Brown, 2004). A greater focus on evidenced outcomes such as improvements in adaptive functioning, quality of life and quality of supports rather than planning, could address these shortfalls.

**Active Support (AS)**

An evidence-based practice model focused on the training of staff in engaging the people they support in meaningful activities and social relationships has been described as Active Support (AS) (Bould, Bigby, Iacono, & Beadle-Brown, 2019; Mansell & Beadle-Brown, 2012). AS is a model of enabling people with ID to engage in meaningful activity and relationships (Mansell & Beadle-Brown, 2012). This model has also been shown to reduce distressed behaviours, when included as a component of comprehensive intervention frameworks, such as Positive Behaviour Support (PBS) (McGill et al., 2018) described below. The sustainability of this approach however is mediated by individual factors such as staff training models - classroom and “on the job” (Flynn et al., 2018) – and systemic factors such as strong practice leadership embedded within the organisation (Bould et al., 2019).

A common thread in the literature on the provision of individualised supports, is that people who experience more severe problems, such as those presenting with distressed behaviours or complex presentations, can experience poorer life outcomes (Gormley et al., 2019; Mansell & Beadle-Brown, 2004; McGill et al., 2018). The presence of distressed behaviours can amplify the difficulties experienced by people with ID, and place pressure on the provision of effective individualised supports by organisations and direct support personnel (DSP) (Emerson, Robertson, et al., 2001).

**Distressed Behaviours**

For a behaviour to be determined “challenging” in clinical practice, it needs to lead to significant consequences for the person – such as restrictions or restraints (Woods & Houghton, 2016). This term was coined by The Association for Severe Handicaps
(TASH) in
the US, with a view of focusing on the context in which challenging behaviours occurred, rather than labelling the individual as inherently “challenging” (Banks et al., 2007). However, the term has migrated from a social to a diagnostic one, and people with ID that present with behaviours that challenge may be doubly marginalised as a result (Banks et al., 2007). This diagnostic idiom has also been used to identify specialist services and certain professional roles (e.g., challenging behaviour teams), resulting in the responsibility falling to the individual rather than the service or those employed to support the person (Banks et al., 2007). The terms “challenging” or “distressed” to describe a person’s behaviour are also subjectively determined and some authors have argued that it is only where such difficulties are at a level that significantly and detrimentally impact on daily life and wellbeing that interventions should be considered (Healy, Dempsey, Lydon & Grealish, 2021). Prevalence rates of distressed behaviour among people with disability are reported to be between five and 15%, with higher rates observed in those with more severe disability (Emerson & Bromley, 1995; Emerson et al., 2001; NICE, 2015). It is widely agreed that distressed behaviour arises from biological, social, and environmental causes (Adams & Dunsmuir, 2009; Banks et al., 2007; NICE, 2015). Re-institutionalisation and high service costs due to out-of-area placements and individual care packages are all associated with the management of distressed behaviours (Robertson et al., 2004; Hassiotis et al., 2014). Many people that present with distressed behaviours have been subject to restrictive practices such as physical and chemical restraint (Allen, Lowe, Brophy, & Moore, 2009; Heyvaert, Saenen, Maes, & Onghena, 2014). The arduous balance between the individuals’ rights for independence and the service providers duty of care often leans towards a protective desire to keep him or her safe, thus promoting dependence and safety-focused behaviours (Sheerin, Griffiths, de Vries, & Keenan, 2015). Restrictive and aversive approaches are not reflective of the values of a rights-based approach to disability service provision.
Jenkins, 2005). Positive Behaviour Support, or PBS, emerged from a need for a values
and evidence-based approach for supporting individuals that experienced distress
(Allen et al., 2005).

Positive Behaviour Support (PBS)

PBS materialised in the 1980’s, out of the ethical dilemma surrounding the use of
what were believed to be “harsh” consequences or punishment-based practices with
people with disabilities (Johnston, Foxx, Jacobson, Green & Mulick, 2006). A
recognition for the need to employ strategies that were non-aversive stimulated a focus
on alternative approaches, and Horner and colleagues coined the term “positive
behaviour support” to refer to these procedures (Horner et al., 1990). There have been
several definitions of the term PBS over the years (Horner et al., 1990; Carr et al., 1999;
Warren et al., 2003). Carr & colleagues (2002) defined PBS as “an applied science that
uses educational and systems change methods to enhance quality of life and minimize
problem behaviour” (Carr et al., 2002, p. 4). This model of practice also has its roots in
the inclusion movement, which holds that people with disabilities should have the same
opportunities in life as their non-disabled peers (Wolfensberger, 2011). PBS encapsulates
nine core values: comprehensive lifestyle change and quality of life, a life span
perspective, ecological validity, stakeholder participation, social validity, systems change
and multi-component intervention, emphasis on prevention, flexibility with respect to
scientific practices and multiple theoretical perspectives (Carr et al., 2002). There is a
growing body of evidence supporting the use of this framework across settings and
populations (Carr & Horner, 2007; Charlton, Moulton, Sabey, & West, 2020; Hassiotis et
al., 2014). PBS can be implemented in several ways, some of which are by specialist
behaviour support teams (Hassiotis et al., 2009, Toogood et al., 1994), by individual
practitioners (Allen at al., 2005; McClean & Grey, 2007) and multi-tiered system wide
approaches (Rotholz, Moseley & Carlson, 2013; Allen et al., 2012). The clinical and
cost effectiveness of PBS has been well evidenced in a range of settings (Higgins, 2019; Klaver et al., 2020; Matthews, Enyart & Freeman, 2019). In Ireland, PBS is mandated under the Health Act 2007 for people living in residential settings (Martin, 2015), and is mainly implemented by individual practitioners (Leslie & Tierney, 2013). While PBS is currently considered the “gold standard” of practice for people with ID who experience distress, direct support staff in services often receive little if any training to deliver it (Hassiotis et al., 2018), despite numerous studies indicating that training direct care staff in PBS reduces challenging behaviour (McClean et al., 2005; MacDonald, McGill & Murphy, 2018). The vast majority of “challenging behaviour” training received by direct support staff focuses on the safe use of restraint and management of risk (Oud, 2006). This “specialist led” model of delivery can result in long waiting lists for intervention due to limitations in availability of professional clinical resources (Gunning, 2019; O’Brien, 2019).

**Multi-tiered Systems of Support**

One core value of PBS that is often underreported or underexamined in disability literature, is systems change, which is often regarded as its most valuable feature (Carr & Horner, 2007). Tharp and Wetzel (1969) proposed a tiered model of intervention, led by an expert practitioner who transfers evidence-based knowledge to mediators such as DSP, who in turn influence the behaviour of the person they support. This work laid the foundations for the development of a systemic model of PBS, or setting-wide PBS (SWPBS) (Noltemeyer, Palmer, James, & Wiechman, 2019). The rationale from this framework begins with identifying the most valuable goal or outcome from an organisation (e.g., education, well-being, pro-social behaviour or other), and then selecting evidence-based procedures required to achieve these objectives with a minimum of 80% of the target population (Horner & Sugai, 2015). This framework has been widely adopted by schools in the US and is known as School Wide PBS or “SWPBIS”.
SWPBIS is as a multitiered model of behavioural support (see Figure 1.1) that employs a range of evidence-based interventions to support all behavioural expectations based on collective needs (Gage, Whitford, & Katsiyannis, 2018; Noltemeyer et al., 2019; Simonsen & Sugai, 2019). Tier 1 or foundation supports are provided to all individuals in a setting with the following core principles: effectively teach behaviour to all; early intervention to prevent unwanted escalations of problem behaviour; use of scientifically valid practices; monitor individuals progress and use of data to drive decision making (OSEP Technical Assistance Center on Positive Behavioral Interventions and Supports, 2019). For those that do not meet these expectations, tier 2 supports involve focused small group-based interventions such as social skills teaching or other targeted interventions such as “check in check out” (Noltemeyer et al., 2019). Finally, for those individuals that either do not respond to tier 2 supports, or present with significantly distressed behaviours (e.g., high risk), tier 3 specialist individualised supports may be considered such as functional behaviour assessment and individualised behaviour support plans (Horner, Sugai, & Anderson, 2010). There is ample evidence of the effective application of SWPBIS in educational settings to prevent and reduce problem behaviours, enrich the social culture, and advance social and emotional proficiency (Gage et al., 2018; Horner et al., 2010; Noltemeyer et al., 2019).
Figure 1.1

Tiered Model of Positive Behaviour Support

Tier 3 Intensive individualised support – functional assessment and intervention plan for those with high risk behaviours
1 – 5% of people supported

Tier 2 Targeted group - assessment and intervention for those who need additional supports (e.g., presenting with risk behaviour)
10 – 15% of people supported

Tier 1 Foundation Supports – primary prevention
Service wide interventions to increase quality of life for all
80 – 90% of people supported

There is also a growing body of evidence of the application of this model in alternative settings such as juvenile correctional facilities or alternative educational settings (Gelbar, Jaffery, Stein, & Cymbala, 2015; Sprague, Jolivette, Boden, & Wang, 2020).

Equivalent evidence of the application of this model in adult settings however is limited to date, despite promising outcomes being evidenced (Martin & Dench, 2016; McGill et al., 2018).

Theory to practice gap

Best practice models of support for people with ID, and for those that present with
more complex needs such as distressed behaviour are relatively clear and well documented in the literature. There is a clear picture of what effective practice should involve, however there is a current need to focus on implementation of this practice (Jackson, 2011). A recurring theme is that these approaches are largely mediated by unskilled staff and family members (Beadle-Brown et al., 2016; Dench, 2005; Jackson, 2011; Sheerin, 1998). Direct support staff play a crucial role in the outcomes experienced by people supported, as they are the direct
link between practice models and the quality of service experienced by the person (Bould et al., 2019). “It is what staff do and how they do it that is important” (Beadle-Brown et al., 2016, p.22). Inadequate staff training and poor supervision have been found to impact on the quality of support received by people with ID (Bigby, Bould, & Beadle-Brown, 2017). There is a gap when it comes to putting those theories into practice, sometimes termed the “theory to practice gap” (Beadle-Brown et al., 2016; Campbell, 2010; Smyth, Healy & Lydon 2015). Despite increased community presence through decongregation, several decades of policies have not yet achieved significant inclusion or community participation for people with ID (Amado, Stancliffe, McCarron, & McCallion, 2013; Bigby, Anderson, & Cameron, 2018; McCarron et al., 2019). A disconnect between theoretical developments in service provision and the competencies of DSP in applied settings remains evident (Beadle-Brown et al., 2016; Bigby, Bould, Iacono, & Beadle-Brown, 2020; Swain, Whitley, McHugo, & Drake, 2010).

Social care practices are influenced by multiple factors, such as service characteristics (type and size), staffing (the ratio of staff to residents, staff qualifications, experience, training, knowledge, attitudes, expectations and turnover), organisational hygiene (job satisfaction, stress role clarity and conflict) and management (autonomy of mangers and systems for organising care) and the perceived social validity of treatments and interventions (Bowring, Totsika, Hastings, & Toogood, 2020; Callahan et al., 2017; Hastings, 1997; Mansell, Beadle- Brown, Whelton, Beckett, & Hutchinson, 2008). Also, few studies report the impact on the outcomes experienced by people in supported living environments (Beadle-Brown et al., 2016). These issues will be discussed in the following sections.

**Staffing – the Keystone of Quality in Service Provision**

DSP is an umbrella term used to describe workers that provide direct supports, training, and supervision to people with ID (Johnson, 2019). There are a range of job
titles that fall under this title, such as “health care assistant”, “disability support worker”,
“social
care worker”, “Registered Nurse in Intellectual Disability or RNID”, and so on. The changing policy context around disability service provision previously described, created a need for a broadened direct support workforce with a wide set of competencies (Baker, 2007; Bigby, Johnson, & Traustadottir, 2005). However, it has been reported that most staff working with people with ID do not have qualifications related to their job specifications (Campbell, 2010; Johnson, 2019) creating a significant challenge for organisations in the provision of quality services. “Trial and error” on the job training for new staff further compounds this issue (Windley & Chapman, 2010). Role ambiguity and role conflict within organisations have also been identified as stress factors, for example, caused by vague goals and poor supervision, particularly for those working alone (Emerson & Hatton, 1996). While DSP in services agree with the principles of a human rights-based approach for people with ID in general, some staff find it difficult to accept they can be applied universally – and it is not only ex- institutional staff that struggle with these value-based approaches (Bigby, Clement, Mansell, & Beadle-Brown, 2009). Many staff experience negative side effects of this, such as stress and burnout, injuries at work, inadequate supervision and training and job insecurity (Deveau & McGill, 2014; Devereux, Hastings, & Noone, 2009; Hastings, 2010; Johnson, 2019; Smyth et al., 2015).

**Organisational Factors**

It has been reported that significant reform is needed for disability service provision in Ireland (Wall, 2020). Poor investment in service provision is evidenced in multiple reductions in government funding (Executive, 2016; Health, 2012). This has resulted in salary reductions and unfulfilled vacancies creating additional pressures on DSP and the people they support (Hauben, Coucheir, Spooren, McAnaney, & Delfosse, 2012). Difficulties with high rates of absenteeism, intention to leave and high turnover is
a significant issue for service providers (McCarron et al., 2019; McConkey & Craig, 2018; van der Meer et al.,...
The traditional approach to funding thwarts the needs of individuals and prevents the person from controlling the types of services they need (Keogh & Quinn, 2018). Further, the quality assurance approach required under the auspices of HIQA, for example, has led to the development of a system designed to monitor behaviour. This system creates a dependent hierarchy between staff and residents; where staff are expected to micromanage every facet of the supported person’s life (Altermark, 2017). Murphy and Bantry-White (2020) in their review of 627 published inspection reports, warned that institutional care was being replicated in community based residential settings or “group homes”. There is an increasing focus on risk avoidance rather than positive risk taking, independence and human rights (Seale, Nind, & Simmons, 2013). However, this does not appear to have achieved the stated aim of safeguarding residents from abuse, with 4826 human rights regulatory breaches reviewed (Murphy & Bantry-White, 2020).

Robust Research to Examine Outcomes for People Supported

To date, there is a paucity of research exploring outcomes for people with ID in supported living environments (Beadle-Brown et al., 2016; Gormley et al., 2019; McGill et al., 2018). Of the research available, many studies adopt single case designs where external validity can be problematic and impact generalisation to wider population groups (Hitchcock, Kratochwill, & Chezan, 2015). Randomised control trials, or RCT’s, are the most highly recommended research designs for intervention studies (Jewell, 2014). There is a noted scarcity of the use of the approach in social care research (Gormley et al., 2019; Hastings, 2013; McGill et al., 2018). RCT’s are considered to be difficult and costly to assume with this population group (Brady & O'Regan, 2009; Mulhall, Taggart, Coates, McAloon, & Hassiotis, 2018). These difficulties with conducting high-level well-designed research studies in this sector further stresses the barriers, negative attitudes, and enduring marginalisation that people with ID often face (Mulhall et al., 2018). This
population group have identified
the importance of being involved in research that directly impacts their lives (Beighton et al., 2019; Dorozenko, Bishop, & Roberts, 2016). Furthermore, there is a lack of replication studies, further limiting the applicability of available research in applied settings (Gormley, Healy, Doherty, O’Regan, & Grey, 2019; McGill et al., 2018). There is clearly a need for service provision to be based upon a sound evidence base, so the scarcity of robust gold standard research designs being adopted in disability practice is a concerning one.

Implementation science has been acknowledged as a conceptual and methodological approach to translate evidence into routine practices in health care service provision (Eccles et al., 2009; Grimshaw, Eccles, Lavis, Hill, & Squires, 2012). Implementation science is described as the scientific study of methods to uphold the systematic application of research findings and other evidence-based interventions into everyday practice and to improve the quality and effectiveness of healthcare services (Eccles & Mittman, 2006). This developing discipline can support disability service providers and researchers to better address the issues that impact the implementation of evidence-based practices in real-world environments (Smolkowski, Crawford, Seeley, & Rochelle, 2019).

Social Validity of Approaches

Social validity is described as consumer satisfaction with the goals, procedures and outcomes of interventions and programmes (Cooper, Heron, & Heward, 2019). Interventions that prioritise access to high rates of reinforcement and include key stakeholders in their design, implementation and evaluation elevate social validity (Álvarez, 2014). Many studies report the impact of social validity on treatment fidelity and maintenance of outcomes (Aherne & Beaulieu, 2019; Hassiotis et al., 2014). Treatment fidelity refers to the extent to which an intervention is accurately and consistently applied to all participants (Smith, Daunic, & Taylor, 2007). Data on
treatment fidelity can be used to investigate the feasibility of interventions in real-world settings (Jennett, Harris, & Mesibov, 2003). It has been
demonstrated that DSP who understand the purpose of interventions and have been involved in their development are more likely to implement these techniques with greater accuracy and consistency (Barton, Meadan-Kaplansky, & Ledford, 2018; Callahan et al., 2017; Carter & Wheeler, 2019). Durlak and DuPre (2008) conducted a review of factors influencing implementation and identified 23 causes that can impact the quality of health prevention and promotion programs. The authors organised these elements into five groups: community factors, such as policies for preventing mental health problems and promoting good mental health; provider’s characteristics, such as the ability to implement the intervention; innovative characteristics, such as the possibility of adapting the intervention to the population; organizational capacity, such as institutional openness to change; and means of delivery, such as the training of the professionals who will conduct the intervention (Durlak & DuPre, 2008). With respect to training, skills practiced or rehearsed are more likely to be retained than those that are not (MacDonald & McGill 2013), therefore training that includes opportunities to implement the content is far more effective with regards to maintaining outcomes. It is crucial that the concepts of social validity, treatment fidelity and maintenance of outcomes are considered in future exploration and development of service provision through inclusion of key stakeholders in goal development, selection and design of procedures, and evaluation of key performance indicators.

**Impact of a Global Pandemic**

Services are continuing to struggle to provide individualised services under a global pandemic. At the time of writing, there are over 134.5 million confirmed cases of COVID-19 worldwide and almost 3 million attributed deaths reported (WHO, 2021). People living in residential services such as those with ID have been deemed acutely vulnerable (Organization, 2020). In the early days of coronavirus, many governments enacted blanket bans on visitors to community residential facilities, which severely...
impacted the wellbeing of
people supported (Low et al., 2021). Considerable effects have also been reported for DSP, with an increased risk of mental health problems in the short and longer term, specifically: psychological distress, insomnia, alcohol/drug misuse, symptoms of posttraumatic stress disorder (PTSD), burnout and anger reported (Stuijfzand et al., 2020). Various organisations have had to cope with rapid changes to policies on service provision and risk management, and ongoing fluctuations in staffing levels due to COVID-19 infection protection measures and controls (Hughes & Anderson, 2020; Murray, McKenzie, Martin, & Murray, 2021).

There has been a swift and widespread move to virtual working tools such as videoconferencing platforms and the adoption of telehealth practices (Annaswamy, Verduzco-Gutierrez, & Frieden, 2020; Eapen, Hiscock, & Williams, 2021; Embregts, Tournier, & Frieling, 2021; Unholz-Bowden et al., 2020). While there are some promising examples of the use of these approaches in the provision of evidence-based practices (Higgins, Luczynski, Carroll, Fisher, & Mudford, 2017; Lindgren et al., 2016; Pellegrino & DiGennaro Reed, 2020) further exploration of this aspect of service provision is considered vital.

Conclusions

There is an identified need for robust research on evidence-based approaches to the provision and implementation of best practice for people with ID to produce evidence-based and sustainable outcomes for this marginalised group. Current literature points to further exploration of systemic or setting wide approaches to the provision of human rights-based services for people with ID, that are sustainable and efficient, in an ever changing and challenging environment. Appropriate models of practice and policy in service provision are well evidenced (Amado et al., 2013; Bigby et al., 2020; Martin, 2015; McCausland et al., 2019). However, the theory to practice gap in social care service provision that has been linked to the role of DSP urgently needs to be addressed
(Johnson, 2019), along with
organisational factors such as systemic approaches to evidence-based service provision (McGill et al., 2018), the robustness of research in this area (Gormley et al., 2019) and the ongoing impact of a global pandemic all requiring greater investigation (Annaswamy et al., 2020). Researchers have called for further examination of systemic proactive approaches to service provision (McGill et al., 2018), replication studies and more robust research designs in social care (Bauer & Kirchner, 2020; Gormley et al., 2019; Mulhall et al., 2018), and sustainable, efficient ways of doing this in the current context, for example telehealth approaches (Eapen et al., 2021; Skouteris, 2021; Unholz-Bowden et al., 2020). In summary, the overarching research questions for this thesis are what impact does the implementation of a whole organization model of positive behaviour support have on a) the quality of life and distressed behaviours of adults with intellectual disabilities, b) the skills and attitudes of the direct support staff implementing the framework; and c) the organisation as a whole? The exploration of these research questions necessitates delicate and thoughtful attention given the vulnerability of this group, and the social, economic, and political significance of the research questions. The subsequent programme of research aims to explore these questions by adopting rigorous empirical methodologies in both research design and practice development to thoroughly examine these central themes.
Chapter 2

Setting Wide Positive Behaviour Support in Adult Settings: A Research Synthesis
Dunlap and Carr (2007) describe positive behaviour support (PBS) as an approach to intervention, grounded in the behavioural sciences and integrated with knowledge from biomedical and systems-change strategies, focused on improving quality of life (QOL) and resolving problem behaviours. The PBS movement surfaced in the early 1980’s as the awareness of the human rights violations experienced by people living in institutional settings came to light, and the deinstitutionalisation movement gained momentum (Dunlap et al., 2009). In parallel, significant developments in the field of behaviour modification were occurring, as numerous researchers worked to develop frameworks to guide the ethical use of techniques based on the learning principles including punishment, developed through research in institutions, for application in educational or community settings (Horner & Barton, 1980; Repp & Deitz, 1974; Snell, 1983). Renzaglia and Bates (1983) highlighted the predicament confronting community and school-based practitioners of applying aversive practices involving the application of negative consequences with vulnerable individuals in their work settings. This provided the motivation to identify socially acceptable, evidence and rights-based approaches for supporting people with complex needs and distressed behaviours, which often associated with the restrictive environments they lived in (Beadle-Brown et al., 2007; Dunlap et al., 2009; Hext et al., 2018; Lemay, 2009). However, not all contributors to the literature agreed that the use of aversive procedures needed review, leading to a defining conceptual rupture in the applied scientific community (Dunlap et al., 2009; Johnston et al., 2006).

Much of the early research on understanding the causes of aberrant behaviours originated in the educational and behavioural psychology disciplines (Carr, 1977; Donnellan et al., 1984; Iwata et al., 1994). This resulted in the significant development of fundamental technologies of PBS, functional analysis of behaviour (Iwata et al., 1982) and functional assessment approaches (Dunlap et al., 1991; Horner et al., 2005).
Researchers now had the
means to explore more socially acceptable ways of modifying behaviour in the emerging
culture of human rights and person-centred values (Dunlap et al., 2009; Repp & Singh,
1990).

By the late 1980’s, PBS emerged as a distinct discipline with a widespread base
of practitioners, supporters and communities (Sugai & Horner, 2002), leading to the
publication of a professional periodical, the Journal of Positive Behavior Interventions, in
1999 and the establishment of an international association for PBS in 2003 (Dunlap et
al., 2009). Carr and colleagues (2002) published a seminal article describing the
development of PBS and its foundations in the science of applied behaviour analysis
(ABA), the normalisation movement and person-centred principles which it represented.
The authors identified nine critical features of the model that have now become the
blueprint for subsequent practice. These incorporate comprehensive lifestyle change and
quality of life, stakeholder participation, systems change, multi-component interventions
and numerous theoretical positions (Carr et al., 2002).

Various syntheses, meta-analyses and textbooks describing the application of the
model have been published (Gao, 2020; Hayward et al., 2021; Karger et al., 2018;
MacDonald & McGill, 2013; Mahon et al., 2021; Marquis et al., 2000; Mowat, 2012;
Solomon et al., 2012). Generalisation in the application of PBS beyond disability
practice is also evidenced with studies in forensic (Wardale et al., 2014) and mental
health settings (Duchnowski & Kutash, 2009). With the growth in adoption of the model
and available literature, advances have emerged in the implementation of PBS over the
last two decades. A need for implementation models at larger units of analyses (e.g.,
classrooms, schools, day-service settings) to support wider populations while
incorporating individualised supports also emerged (Carr et al., 2002). Exploration of
ecological constructs, large scale health psychology research and implementation
science influenced the development of a distinct model of implementation within PBS
(Simonsen & Sugai, 2019).
Multi-tiered Models of PBS

Trends in the literature leaned towards a focus on school-wide and system-wide models of intervention (Turnbull et al., 2002) where components of PBS are stratified across three distinct tiers (Horner et al., 2010; Sugai & Horner, 2002). Sugai and Horner (2002) describe school or setting-wide PBS as “a systems approach for establishing the social culture and individualised behavior supports needed for a school to be a safe and effective learning environment for all students” (p. 309). The authors summarise the defining characteristics of the approach as:

a) Having a foundation in ABA and behavioural paradigms;

b) Continuum of interventions focused on prevention and organised across three tiers of support;

c) Focus on directly teaching adaptive and social behaviours to the whole population of the setting;

d) Use of evidence-based practices within the multi-component treatment design;

e) Adoption of a systems perspective by establishing local capacity and proficiency, organisational assurances, large implementation readiness, fidelity, and evaluation, and

f) Data driven decision making.

Syntheses of the literature on school wide models of PBS provide a strong evidence base for the positive impact of this model of support (Lee & Gage, 2020; Noltemeyer et al., 2019; Solomon et al., 2012). However, there appears to be little consideration of the future supports for participants when they progress from educational or childcare settings, as there is a scarcity of literature to date examining the implementation of setting-wide PBS outside of educational facilities, or with adult populations (Hayward et al., 2021; Rotholz & Ford, 2003). Simonsen and colleagues (2011) suggest several
strategies to extend evidenced
systemic practices into alternative settings, however few researchers have examined this. With the progression of deinstitutionalisation across the globe, there is a need to gain a greater understanding of the implementation of systemic models of support in community-based settings for adult populations.

To our knowledge, there has been no attempt to synthesise the extant literature examining the implementation of setting-wide PBS in adult settings. Previous syntheses concerning this framework have focused on educational settings (Lee & Gage, 2020; Noltemeyer et al., 2019). While there are several syntheses examining PBS that include adult populations, these focus on staff training (MacDonald & McGill, 2013; Mahon et al., 2021) and staff perceptions of the paradigm (Karger et al., 2018), and not on setting wide applications. The aim of this systematic review is to evaluate the literature concerning the implementation of setting-wide PBS with adult populations with regards to: a) descriptive features; b) methodological rigour; c) treatment components; d) outcomes observed and, e) recommendations for future research.

**Methods**

**Search Procedures**

A broad search strategy was adopted due to the paucity of research in the use of a systemic model of PBS with an adult population. Relevant articles were identified by conducting comprehensive searches of Academic Search Complete, CINAHL, Embase, ERIC, Medline, PsychoInfo Articles, Social Sciences and Web of Science in May 2021. Searches were completed by inputting *system* OR *setting* OR *train* OR *implement* OR *tier* OR “multi tiered system of support” OR *adopt* OR *organisaiton* AND "*positive behavio?r*" OR *behavio*N3 (challenging *OR intervention*). In addition to the database searches, the reference lists of all eligible studies were reviewed for relevant articles to
increase the scope of the search. Identified articles were uploaded to Covidence (www.covidence.org) for screening and data extraction.

**Inclusion and Exclusion Criteria**

Studies were included that described outcomes of a systemic PBS intervention with adults. Criteria for inclusion in the review were: (a) an adult participant group (18 years or above); (b) the description of the intervention as PBS; (c) the use of a setting-wide, whole organisation or multi-tiered model of positive behaviour support intervention based on the three tiered model described in Chapter 1; (d) original research published in an English language peer-reviewed journal and, (e) publication year of 2000 to 2021. The multi-tiered framework was first reported late in 1999 in a school-based context (Lewis & Sugai, 1999), which is why the publication year was limited as described. PBS has been redefined on numerous occasions in the extant literature (Carr et al., 1999; Sugai & Horner 2009; Gore et al., 2022), thus a decision was reached to accept the authors description of the intervention or treatment as PBS somewhere in the article. References to multiple tiers of support, systemic interventions, or descriptions of interventions that corresponded with the components of systemic PBS in the extant literature (e.g. the three tiered model provided in Chapter 1) were accepted as indicators of a systemic PBS model. Articles were excluded if they did not describe an intervention with outcomes (e.g., conceptual studies) of if the term “positive behaviour support” was not used within the article. Diversity in research design was an important feature of the synthesis and is a well-established approach in health service research (Dixon-Woods et al., 2006; Harrison et al., 2021). The inclusion of qualitative, quantitative, and multi-methods research serves to enhance and deepen understanding of multi-tiered complex interventions (Collins et al., 2006; Harrison et al., 2021).

A total of 22720 articles were identified during the initial online database search. When
duplicates were removed a total of 18563 articles remained. The abstracts of the studies were screened using the full eligibility criteria by means of the online platform Covidence (http://www.covidence.org). A total of 155 articles were identified for full text review, with an additional three studies identified through reference searches and forward searches using google scholar. Two reviewers completed the full text review, and nine studies were identified for inclusion in the synthesis (see Figure 2.1 for PRISMA diagram of the search procedure).
**Figure 2.1**

*PRISMA Diagram of Search Procedure*

- 22720 Studies imported for screening
- 18718 Studies screened
- 155 full text studies assessed for eligibility
- 149 studies excluded
  - 72 Not system-wide PBS
  - 53 Wrong population group
  - 14 Not original research reporting outcomes of intervention
  - 2 Not peer reviewed
  - 2 Unable to source
  - 2 Year of publication prior to 2000
- 0 studies identified in ancestral search
- 3 studies identified in forward search (google scholar)
- 9 studies included

**Article Coding**

A data extraction template was developed based on the standardised format in Covidence and adapted to include information potentially relevant to the goals of the review with a view to reducing post hoc selection biases (Cooper, 2015) and is shown in Table 2.1. The Quality Assessment Tool for Studies with Diverse Designs (QATSDD) was employed to critically appraise the quality of the included studies (Fenton et al., 2015; Sirriyeh et al., 2012). This is a 16-item instrument specifically developed to evaluate the quality of research that is included in multiple methodological syntheses (see Table 2.2). The tool focuses on the congruency, clarity and structure of the reported research procedures over 16 evaluative
indicators that are measured on a 3-point Likert scale. (Fenton et al., 2015). Each study is given an overall quality score. Quality scores of all included studies are then totaled and calculated as a percentage of the maximum possible score. The instrument shows good reliability and validity in the critical appraisal of a multiplicity of studies and has been used in more than 80 systematic reviews to date (Harrison et al., 2021).

**Table 2.1**

*Data Extraction Headings for Article Coding*

<table>
<thead>
<tr>
<th>Main Heading</th>
<th>Sub-headings</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Information</td>
<td>Authors</td>
</tr>
<tr>
<td></td>
<td>Year of publication</td>
</tr>
<tr>
<td></td>
<td>Title of study</td>
</tr>
<tr>
<td></td>
<td>Journal</td>
</tr>
<tr>
<td></td>
<td>Country</td>
</tr>
<tr>
<td>Participants</td>
<td>Description of participant group</td>
</tr>
<tr>
<td></td>
<td>Participant recruitment</td>
</tr>
<tr>
<td></td>
<td>Sample size</td>
</tr>
<tr>
<td>Study characteristics</td>
<td>Research design</td>
</tr>
<tr>
<td></td>
<td>Setting</td>
</tr>
<tr>
<td></td>
<td>Data collection procedure</td>
</tr>
<tr>
<td></td>
<td>Dependent variable(s)</td>
</tr>
<tr>
<td></td>
<td>Development of treatment components</td>
</tr>
<tr>
<td></td>
<td>Treatment components</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Outcome measures used</td>
</tr>
<tr>
<td></td>
<td>Reliability</td>
</tr>
<tr>
<td></td>
<td>Procedural fidelity</td>
</tr>
<tr>
<td></td>
<td>Summary of findings</td>
</tr>
<tr>
<td></td>
<td>Limitations</td>
</tr>
</tbody>
</table>
Table 2.2

Quality Assessment Tool for Studies with Diverse Designs (Fenton et al., 2015)

<table>
<thead>
<tr>
<th>Domain</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A clearly stated aim</td>
<td>The research question should be precise and relevant in the light of available literature</td>
</tr>
<tr>
<td>Inclusion of consecutive participants</td>
<td>All participants potentially fit for inclusion (satisfying the criteria for inclusion) have been included in the study during the study period (no exclusion or details about the reasons for exclusion)</td>
</tr>
<tr>
<td>Prospective collection of data</td>
<td>Data were collected according to a protocol established before the beginning of the study</td>
</tr>
<tr>
<td>Endpoints appropriate to the aim of the study</td>
<td>Definite explanation of the criteria used to evaluate the main outcome which should be in agreement with the question addressed by the study. Also the endpoints should be assessed on an intention-to-treat basis</td>
</tr>
<tr>
<td>Unbiased assessment of the study endpoint</td>
<td>Blind evaluation of objective endpoints and double-blind evaluation of subjective endpoints. Alternatively, the reasons for not blinding should be stated</td>
</tr>
<tr>
<td>Follow up period appropriate to the aim of the study</td>
<td>The follow-up should be adequately long to allow the assessment of the main endpoint and possible adverse effects</td>
</tr>
<tr>
<td>Loss to follow up less than 5%</td>
<td>All participants should be included in the follow up. Otherwise the proportion lost to follow up should not surpass the proportion experiencing the major endpoint</td>
</tr>
<tr>
<td>Prospective calculation of the study size</td>
<td>Information of the size of demonstrable difference of interest with a calculation of 95% confidence interval, according to the expected incidence of the outcome event, and information about the level for statistical significance and estimates of power when comparing the outcomes</td>
</tr>
<tr>
<td>An adequate control group</td>
<td>Having a gold standard diagnostic test or therapeutic intervention recognised as the prime intervention according to the available published data</td>
</tr>
<tr>
<td>Contemporary groups</td>
<td>Control and studies group should be managed during the same time period (no historical comparisons)</td>
</tr>
<tr>
<td>Baseline equivalence of groups</td>
<td>The groups should be comparable regarding the criteria other than the studied endpoints. Absence of confounding factors that could bias the interpretation of the results</td>
</tr>
<tr>
<td>Adequate statistical analyses</td>
<td>Whether the statistics were in agreement with the type of study with calculation of confidence intervals or relative risk</td>
</tr>
</tbody>
</table>

**Interrater Agreement**

Inter-rater agreement exponents gauge the degree to which the responses of at least two independent raters are consistent. Identified articles were examined for inclusion against the stated inclusion criteria by the first author. Initially, inter-rater agreement was assessed during the full text screening of identified studies.
Approximately 16% (n = 25) of the studies
were reviewed by a second rater for inclusion. These studies were arbitrated to be included, excluded or uncertain by the second rater. Initial inter-rater agreement was calculated as 68%. Any uncertainties or disagreements were deliberated by the reviewers, based on the stated inclusion and exclusion criteria, until a consensus was reached. Subsequently, inter-rater agreement for inclusion of studies was calculated as 100%.

Covidence (http://www.covidence.org) is an online management tool for systematic reviews which provides a mean of conducting and calculating inter-rater agreement checks for data coding and quality assessment. The rater can either select a pre-populated data extraction and quality assessment template, or create a bespoke template based on the needs of the study. The data extraction template and quality assessment tool described previously were used in this case. Data in all included studies were extracted and assessed by the first author and an independent second rater. Raters individually logged in to the platform and independently completed the data extraction and quality assessment templates. The online tool then provided a summary table highlighting areas of disagreement which was used to calculate the inter-rater agreement value. An agreement between authors was scored for instances of exact agreement on quantitative items (e.g., number of participants) or total agreement for conceptual items that involved some interpretation from the coder (e.g., how treatment components were selected). Agreement for data extraction was calculated as 98% and agreement for quality assessment as calculated as 96%. All instances of disagreement were discussed by the coders and a final code was reached by consensus.

Results

A total of nine studies met the inclusion criteria and were published between 2003 and 2021. Table 2.3 summarises the general information, participant and study characteristics, and intervention outcomes of the identified studies.
Table 2.3

Details of Included Studies

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>Age Range</th>
<th>Design</th>
<th>Measures/Data collection tools</th>
<th>Interventions</th>
<th>Outcomes</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allen, D., Kaye, N., Horwood, S., Gray, D. &amp; Mines, S., 2012</td>
<td>Not specified</td>
<td>Not specified</td>
<td>Case Report</td>
<td>Periodic Service Review; Behaviour Monitoring Forms</td>
<td>Optimum physical environments, active support, management development programme, service development projects, staff emotional support</td>
<td>Reduction in overall use of physical interventions across settings</td>
<td>No reliability checks, population not static, no data on collateral changes, non-experimental, no data on staff, no statistical analysis</td>
</tr>
<tr>
<td>Evans, R., Evans, L. &amp; Rodgers, T., 2020</td>
<td>114 staff 178 adults with ID</td>
<td>21 – 70 18 - 82</td>
<td>Case Report</td>
<td>Supervisor observation, supervisory check sheets, routine incident reports, social validity survey</td>
<td>Brief positive interactions/meaningful interactions, supervisory checks of implementation fidelity, feedback to DSP’s, training for DSP and supervisors, programme embedded in organisational manuals and policies, regular update emails, agenda item at regular staff meetings, reinforcement for staff (pizza party) and supervisors (slushie)</td>
<td>Increases observed in implementation fidelity across settings for both DSP and supervisors. Decreases in challenging behaviour Self reports indicated greater confidence, relationships with individuals supported and acceptance of the programme – however also resource intensive (time)</td>
<td>Some staff struggled to reach fidelity targets, retrospective analysis – no experimental controls, no reliability checks for incident reports, no statistical analysis of outcomes to determine significance</td>
</tr>
<tr>
<td>Freeman, R., Smith, C., Zarcone, J., Kimbrough, P., Tieghi-Benet, M., Wickham, D., Reese, M., Hine, K. &amp; Koegel, R., 2005</td>
<td>11 staff</td>
<td>Not specified</td>
<td>Case Report</td>
<td>Pre-post training fidelity measures for PBSP’s and PCP’s completed, PBSP/PCP ’s in place prior to professional involvement, measures of problem behaviour, adaptive behaviour and quality of life, The Self Assessment of Contextual Fit Survey, The Person-Centred Planning Process Satisfaction Survey</td>
<td>Facilitator training in PBS/PCP comprising of online instruction, field based activities, portfolio development and resource toolbox over a 1 year period, online resources and instruction, expert support for organisation–wide and state-wide PBS planning processes</td>
<td>Increase in PBSP and PCP fidelity scores completed by professionals in training, 11 facilitators completed training. Organisation-wide and state–wide planning model including residential setting support and family support described in report</td>
<td>Data was still in the process of being collected at the time of publication so incomplete, no statistical analysis of outcomes though the planned analysis is described</td>
</tr>
<tr>
<td>Fuchs, K. &amp; Ravoux, P., 2019</td>
<td>14 adults with ID</td>
<td>17.5 and older</td>
<td>Naturalistic pre- post intervention evaluation and a qualitative study</td>
<td>Quarterly reports, Health of the Nation Outcome Scales for people with Learning Disabilities, Behaviour Problems Inventory, Guernsey</td>
<td>PBS, systemic approaches, speech and language therapy, specialist nursing assessments interventions and health facilitation, advanced practitioner support for allocated social workers, person/family centred partnership approach,</td>
<td>Clinical outcomes include improvement in overall wellbeing, behaviours, health outcomes and adaptive function. Sizable reductions in financial costs were observed. Qualitative</td>
<td>Small sample size, interventions not individually assessed</td>
</tr>
</tbody>
</table>
Community Participation and Leisure Assessment

formulation workshops, care coordination risk management and care planning via systemic network meetings, sustainable capable environments in locality

feedback indicated that clinical leadership, coordination of MDT input, responsiveness and family/person centred partnership approaches were most valued by the individuals supported. Further outcomes included successful transitions and prevention of service breakdown, development of capable environments in the community, individualised PBS’s and provider/family support

Higgins, L., 2021

20 adults with ID 20 - 39 Case Report

Periodic Service Review, Incident Reporting and Investigation System, Behaviour Support Plan Quality Evaluation tool, Maslow Assessment of Needs Scale, Positive Environment Checklist, MTS, staff turnover and retention data, qualitative feedback

Practice leadership by PBS implementation team, individual PBSP’s, enrichment of the physical and social environment, interactive meaningful engagement training, weekly “bite-size” staff training in PBS concepts and principles

Consistent improvements for target interventions in key service improvement areas observed. 20 PBSP developed of superior quality. Use of restrictive practices reduced by 99% and reduction in incidents of problem behaviour. Increases in staff retention and reductions in staff turnover indicated


81 adults with ID 19 - 84 Pragmatic cluster randomised controlled trial


Audit of practice quality across settings to determine outcome standards across 8 domains of social care practice, agreement of standards with staff teams, monthly progress review meetings, performance feedback to managers, specific coaching support and training for DSP/Managers, utilisation of existing and external local professional resources, progress chasing and fading of support towards the conclusion of the intervention

An average of 80% of outcome standards set were achieved. Challenging behaviour reduced significantly in all the experimental group settings. Significant increase in quality of social care was observed. While quality of life improved more in experimental settings there wasn’t a significant difference between groups on this measure. The intervention was received positively by staff, families and professionals engaged with experimental settings.

Study lacks experimental control, independent observation, inter-rater reliability and treatment fidelity data. Intervention was resource intensive with heavy reliance on one practice leader in particular

Results may be confounded by additional attention received in experimental settings, no data on supports for control group during intervention, impact of staff turnover, cost of intervention not measured, risk of bias due to experimenter involvement in intervention and analysis, some measures of unknown reliability/validity

Chapter 2

46
<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Staff</th>
<th>Data Collection Method</th>
<th>Analysis Method</th>
<th>Training Program</th>
<th>Themes Identified</th>
<th>Participants' Opinions</th>
</tr>
</thead>
<tbody>
<tr>
<td>McKenzie, K., Martin, R., Metcalfe, D., Murray, G., McNall, A. &amp; Noone, S., 2020</td>
<td>42</td>
<td>27 - 55</td>
<td>Qualitative - thematic analysis</td>
<td>Semi-structured interviews</td>
<td>Training programme including face to face teaching, e-learning and supervision targeting system-wide as well as individual change with two qualification levels: a) Postgraduate certificate or advanced diploma in leading PBS (level 6/7 award); b) Certificate in facilitating PBS in teams or Award of competence in PBS for support workers (level 4 awards)</td>
<td>Two themes and six subthemes were identified by the researchers. Participants highlighted the importance of understanding the principles and values of PBS to the successful adoption of the model. Participants expressed a confidence in the approach due to its evidence base. The systemic multi-component nature of PBS were also determined to be crucial, and participants highlighted successes at both multiple organisational levels and for people with ID and their families.</td>
<td>were a self-selecting group and their opinions may differ from other staff who declined to participate, staff interviewed by different researchers, no fidelity checks for subjective experiences, risk of bias as researchers were knowledgeable of the model.</td>
</tr>
<tr>
<td>Reid, D., Rotholz, D., Parsons, M., Morris, L., Braswell, B., Green, C. &amp; Schell, R., 2003</td>
<td>398</td>
<td>Not specified</td>
<td>Observational checklists, training evaluation forms, focus group feedback</td>
<td>Competency based PBS supervisory training programme with 26 modules combining classroom based and on the job training approaches. Each module targeted a specific knowledge base and/or performance skill</td>
<td>In the initial phase, all participants achieved 100% mastery in both observation and staff training skills. In the state-wide implementation phase, 85% of participants successfully completed the training. Feedback indicated that 95% of participants reported the training to be extremely/very useful and 99.6% would recommend to colleagues. Feedback on impact of training on practice indicated improved quality of care for supported individuals and enhanced supervision with DSP.</td>
<td>No formal evaluation of the outcomes experienced by individuals with ID were included.</td>
<td></td>
</tr>
<tr>
<td>Riding, T., 2016</td>
<td>Not stated</td>
<td>Not specified</td>
<td>Case report</td>
<td>Central incident register, programme of audits for PBSP, family and carer involvement and post-incident debrief</td>
<td>“Safewards” an integrated model of conflict and containment, PBS training resources, PBS e-learning module for entire staff team</td>
<td>All forms of restraint use reduced by 42% from baseline. Planned use of prone restraint eliminated. Quality of PSBP’s described as “exceptional” and positive culture change acknowledged by external quality assessors.</td>
<td>No experimental control demonstrated or reliability/validity checks. Also no data on implementation fidelity.</td>
</tr>
</tbody>
</table>
Participants

Participants were characterised as either individuals with ID or staff working with individuals with ID. Three studies described their participant group as staff members (Freeman et al., 2005; McKenzie et al., 2020; Reid et al., 2003) and three studies identified individuals with ID as their target population (Fuchs & Ravoux, 2019; Higgins, 2021; McGill et al., 2018). One study identified both staff and adults with ID as the participant group (Evans et al., 2020), and two did not specify whether the participants were staff or individuals with ID (Allen et al., 2012; Riding, 2016). For some of the studies the primary population was described as adults with ID, however staff related data were also included in the results (Freeman et al., 2005; Higgins, 2021; McGill et al., 2018). Based on the reported demographic information, 293 adults with ID and 565 staff participated in systemic PBS interventions across all nine included studies. All individuals supported who participated in the studies were adults with ID and/or autism and presented with behaviours of concern. Staff participants included DSP, managers and supervisors, and clinical personnel. The age range for adults with ID was reported as 18 to 82 years, and the age range for DSP and supervisors was reported as 18 to 70 years.

Outcome Measures for Adults with ID

Dependent variables and selected outcome measures for participants with ID as described by the authors of the included studies are summarised in Table 2.4. While six of the studies reported data on problem behaviour (Allen et al., 2012; Evans et al., 2020; Fuchs & Ravoux, 2019; Higgins, 2021; McGill et al., 2018; Riding, 2016), only two studies employed an identified quality of life measure (Fuchs & Ravoux, 2019; Higgins, 2021).
Table 2.4

Dependent Variables and Outcome Measures for Participants with ID

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Measures</th>
<th>Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behaviours of concern</td>
<td>Routine incident reports</td>
<td>Evans et al. (2020); Higgins (2021); Riding (2016)</td>
</tr>
<tr>
<td></td>
<td>Behaviour Monitoring Forms</td>
<td>Allen et al. (2012)</td>
</tr>
<tr>
<td></td>
<td>Behaviour Problems Inventory (BPI) (Rojahn, Matson, Lott, Esbensen, &amp; Smalls, 2001)</td>
<td>Fuchs and Ravoux (2019)</td>
</tr>
<tr>
<td>Physical, Social and Emotional Wellbeing</td>
<td>HoNOS-LD (Wing et al., 1999)</td>
<td>Fuchs and Ravoux (2019)</td>
</tr>
<tr>
<td></td>
<td>Active Support Measure (ASM) (Mansell &amp; Elliott, 1996)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The Maslow Assessment of Needs Scale (Mans-LD) (Skirrow &amp; Perry, 2009)</td>
<td>Higgins (2021)</td>
</tr>
</tbody>
</table>

Outcome Measures for Staff and/or Setting

A summary of the dependent variables as described by the authors of the included studies and outcome measures used for staff participants is shown in Table 2.5. Several of the articles used existing organisational data collection methods (Evans et al., 2020; Higgins, 2021; Reid et al., 2003) for staff related data, and cited operational efficiency as the rationale for this decision. However, as these tools are of unknown reliability and validity, the results of these reports need to be interpreted with care.
### Table 2.5

**Dependent Variables and Outcome Measures for Staff Participants**

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Measures</th>
<th>Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality and fidelity</td>
<td>Observational checklists</td>
<td>Evans et al. (2020); Reid et al. (2003)</td>
</tr>
<tr>
<td></td>
<td>PBSP fidelity check (Robert H Horner, Sugai, Todd, &amp; Lewis-Palmer, 2000)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PCP fidelity checks</td>
<td>Friedman et al., (2005)</td>
</tr>
<tr>
<td></td>
<td>(Browning Wright, Mayer, &amp; Saren, 2006)</td>
<td>Higgins (2021)</td>
</tr>
<tr>
<td></td>
<td>PBSP Audits</td>
<td>Riding (2016)</td>
</tr>
<tr>
<td>Social Validity</td>
<td>Social validity survey</td>
<td>Evans et al. (2020); McGill et al. (2018)</td>
</tr>
<tr>
<td>Consumer satisfaction</td>
<td>The Person-Centred Planning Process Satisfaction Survey</td>
<td>Friedman et al. (2005)</td>
</tr>
<tr>
<td>Staff perspectives and feedback</td>
<td>Semi-structured interviews</td>
<td>McKenzie, Martin, et al. (2020); Higgins (2021)</td>
</tr>
<tr>
<td></td>
<td>Training evaluation forms</td>
<td>Reid et al. (2003)</td>
</tr>
<tr>
<td></td>
<td>Focus groups</td>
<td>Reid et al. (2003)</td>
</tr>
<tr>
<td></td>
<td>Post incident debriefs</td>
<td>Riding (2016)</td>
</tr>
<tr>
<td>Staff turnover and retention</td>
<td>Routine organisational data</td>
<td>Higgins (2021)</td>
</tr>
</tbody>
</table>

*Note*: Abbreviations: Positive behaviour support plan (PBSP), Person centred plan (PCP)

**Design**

Five of the included studies were categorised as case reports of an intervention and did not provide empirical analyses (Allen et al., 2012; Evans et al., 2020; Freeman et al., 2005; Higgins, 2021; Riding, 2016). Within the three empirical studies, only one used a control group in a pragmatic cluster randomised control trial (McGill et al., 2018), one study adopted a repeated measures within and between subjects design (Reid et al., 2003) and one selected a naturalistic pre-post intervention evaluation (Fuchs & Ravoux, 2019). One of the studies was a qualitative design using thematic analysis (McKenzie et al., 2020) and one study included qualitative feedback in their reported findings (Fuchs...
& Ravoux, 2019).
Setting and study location

Six of the studies were conducted in the United Kingdom (Allen et al., 2012; Fuchs & Ravoux, 2019; Higgins, 2021; McGill et al., 2018; McKenzie et al., 2020; Riding, 2016) and three in the United States (Evans et al., 2020; Freeman et al., 2005; Reid et al., 2003). With respect to the settings, four of the articles involved specialist clinical in-patient settings for adults with ID and/or autism and challenging behaviours (Allen et al., 2012; Evans et al., 2020; Higgins, 2021; Riding, 2016), three included community based residential settings (Evans et al., 2020; McGill et al., 2018; Reid et al., 2003) and three involved disability service providers where it is not specified if they are day services, residential or both (Freeman et al., 2005; Fuchs & Ravoux, 2019; McKenzie et al., 2020). Three studies involved one service setting (Allen et al., 2012; Higgins, 2021; Riding, 2016), four of the studies concerned multiple settings (Evans et al., 2020; Fuchs & Ravoux, 2019; McGill et al., 2018; McKenzie et al., 2020) and two of the included articles reported on state-wide implementation of the model (Freeman et al., 2005; Reid et al., 2003). Study authors were affiliated with the host organisations in five of the included studies (Allen et al., 2012; Evans et al., 2020; Fuchs & Ravoux, 2019; Reid et al., 2003; Riding, 2016). Freeman and colleagues (2005) were affiliated with the academic institution part funding the research.

Development of Interventions

Four of the included studies reported conducting various audits of service provision, environment, and staff performance with the aim of identifying key areas of practice development within the systemic PBS construct (Higgins, 2021; McGill et al., 2018; McKenzie et al., 2020; Riding, 2016). The remaining studies based these elements on evidence-based practice in the literature, government guidance reports and expertise within the discipline (Allen et al., 2012; Evans et al., 2020; Freeman et al., 2005; Fuchs & Ravoux, 2019; Reid et al., 2003; Riding, 2016). Two of the studies
incorporated the views of the
individuals with ID and their families into the development of the intervention (Fuchs & Ravoux, 2019; McKenzie, Martin, et al., 2020).

**Treatment Components**

The intervention components identified in the included articles are summarised in Table 2.6 based on the multi-tiered framework of setting-wide PBS. The identified intervention components have been summarised by the author in this manner to map the described treatment components to the three-tiered setting wide PBS framework given in Chapter 1 (pg. 10). Data driven reviews occurred across a variety of areas, including job performance and supervision (Allen et al., 2012; Evans et al., 2020; Higgins, 2021; McGill et al., 2018; Reid et al., 2003; Riding, 2016), implementation fidelity checks (Allen et al., 2012; Evans et al., 2020; Freeman et al., 2005; Higgins, 2021; McGill et al., 2018) and quality of supports provided (Freeman et al., 2005; Higgins, 2021; McGill et al., 2018; Reid et al., 2003; Riding, 2016). All nine included studies incorporated a form of workforce development programme in their intervention framework. The structure and content of development programmes varied from specific brief workshops in PBS concepts and social care practice (Allen et al., 2012; Higgins, 2021; McGill et al., 2018) to comprehensive longitudinal training in positive behaviour support and person-centred planning (Freeman et al., 2005; McKenzie et al., 2020; Reid et al., 2003). Several of the training programmes involved work-based activities to encourage participants to bring knowledge and skills developed into day-to-day practice (Evans et al., 2020; Freeman et al., 2005; Higgins, 2021; McGill et al., 2018; McKenzie et al., 2020; Reid et al., 2003).

Three studies integrated e-learning into the administration of the staff training programme (Freeman et al., 2005; McKenzie et al., 2020; Riding, 2016). Three of the articles specifically detail environmental enhancement strategies (Allen et al., 2012; Fuchs & Ravoux, 2019; Higgins, 2021) including development of both physical and social environments for the individuals supported.
Table 2.6

*Summary of Setting-Wide PBS Treatment Components*

<table>
<thead>
<tr>
<th>Tier 1 Supports</th>
<th>Tier 3 Supports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data driven reviews and feedback (Allen et al., 2012; Evans et al., 2020; Fuchs &amp; Ravoux, 2019; Higgins, 2021; McGill et al., 2018; Riding, 2016)</td>
<td>Individualised PBSP (Allen et al., 2012; Freeman et al., 2005; Fuchs &amp; Ravoux, 2019; Higgins, 2021)</td>
</tr>
<tr>
<td>Workforce development (Allen et al., 2012; Evans et al., 2020; Freeman et al., 2005; Fuchs &amp; Ravoux, 2019; Higgins, 2021; McGill et al., 2018; McKenzie et al., 2020; Reid et al., 2003; Riding, 2016)</td>
<td>Multi-disciplinary Reviews (Allen et al., 2012; Fuchs &amp; Ravoux, 2019; McGill et al., 2018)</td>
</tr>
<tr>
<td>Quality of Life enhancement through person centred planning, active supports and/or meaningful engagement (Allen et al., 2012; Evans et al., 2020; Freeman et al., 2005; Fuchs &amp; Ravoux, 2019; Higgins, 2021; McGill et al., 2018)</td>
<td>Family involvement (Fuchs &amp; Ravoux, 2019; Riding, 2016)</td>
</tr>
<tr>
<td>Safe reactive approaches (Allen et al., 2012; Fuchs &amp; Ravoux, 2019; Riding, 2016)</td>
<td></td>
</tr>
<tr>
<td>Environmental enhancement (Allen et al., 2012; Fuchs &amp; Ravoux, 2019; Higgins, 2021)</td>
<td></td>
</tr>
</tbody>
</table>

**Outcomes**

Two of the included studies reported improvements in quality of life for the individuals supported (Fuchs & Ravoux, 2019; McGill et al., 2018), however the improvements in the latter were not statistically significant. Four of the studies reported reductions in distressed behaviours (Evans et al., 2020; Fuchs & Ravoux, 2019; Higgins, 2021; McGill et al., 2018), and three studies reported decreases in use of restrictive practices such as physical restraint (Allen et al., 2012; Higgins, 2021; Riding, 2016). Improvement in quality of supports were reported in respect to the quality of PBS plans and person-centred plans (PCP) (Freeman et al., 2005; Higgins, 2021; Riding, 2016), community transitions and environments (Fuchs & Ravoux, 2019), quality of staff interactions and engagement (McGill et al., 2018; Reid et al., 2003) and staff mastery of PBS competencies (Reid et al., 2003).
Increases in implementation fidelity were reported in three of the studies (Evans et al., 2020;
Higgins, 2021; McGill et al., 2018). Several of the included articles reported on staff experiences and feedback. Staff reported feeling more confident in their practice (Evans et al., 2020), an appreciation for the principles and values of setting-wide PBS (McKenzie et al., 2020), and highlighted clinical leadership, multi-disciplinary team (MDT) coordination, systemic implementation and a person/family centred approach as crucial factors for successful outcomes (Fuchs & Ravoux, 2019; McKenzie et al., 2020). However, staff also expressed that the intervention was resource intensive with respect to their time (Evans et al., 2020). Two studies reported improvements in staff retention (Higgins, 2021; McKenzie et al., 2020) and one study reported significant cost savings following implementation of the model (Fuchs & Ravoux, 2019).

**Quality Assessment of Included Studies**

The quality of the included studies was assessed using the QATSDD (Sirriyeh et al., 2012). The highest available score on the measure was 48. Individual quality scores, summary percentage scores and an overall mean percentage score of included studies are detailed in Table 2.7. Results of the quality appraisal of included studies indicates that the articles were of moderate eminence (52%) ranging from a low score of 23% (Allen et al., 2012) to a high score of 73% (McGill et al., 2018).
Table 2.7

QATSDD Scores for Included Studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Total Score (Max 48)</th>
<th>Percentage Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allen et al. (2012)</td>
<td>11</td>
<td>23</td>
</tr>
<tr>
<td>Evans et al. (2020)</td>
<td>24</td>
<td>50</td>
</tr>
<tr>
<td>Freeman et al. (2005)</td>
<td>25</td>
<td>52</td>
</tr>
<tr>
<td>Fuchs and Ravoux (2019)</td>
<td>26</td>
<td>54</td>
</tr>
<tr>
<td>Higgins (2021)</td>
<td>27</td>
<td>56</td>
</tr>
<tr>
<td>McGill et al. (2018)</td>
<td>35</td>
<td>73</td>
</tr>
<tr>
<td>McKenzie et al. (2020)</td>
<td>33</td>
<td>69</td>
</tr>
<tr>
<td>Reid et al. (2003)</td>
<td>30</td>
<td>63</td>
</tr>
<tr>
<td>Riding (2016)</td>
<td>15</td>
<td>31</td>
</tr>
</tbody>
</table>

Mean % score for included studies 52

*Note:* Total possible score for QATSDD is 48

**Discussion**

There is a growing body of literature from 2000 evidencing the efficacy of systemic applications of PBS in promoting quality of life outcomes and reducing problem behaviours. However, few studies to date have focused on the inclusion of adult populations. The aim of this synthesis was to identify the extant published research on the systemic application of PBS and to examine how findings from this research base may impact on future practice.

The current synthesis highlighted that the implementation of this model with an adult population may currently be considered incipient. The current review evaluated nine included studies examining the impact of setting-wide PBS with participants over the age of 18 years. The quality of these studies was assessed using the QATSDD (Sirriyeh et al., 2012) and were coded and analysed using an adapted version (Cooper, 2015) of the standard data extraction template on the Covidence platform. Included articles employed diverse designs, with the majority utilising case reports, followed by group designs and qualitative methodologies, or a combination of these. All the reported interventions included multiple components that fit with the defined values and principles of setting-
wide PBS, with each including some form of workforce development programme in their intervention. All nine studies reported successful
outcomes across a range of areas including improved quality of life, levels of engagement from DSP, skills in DSP and supervisors, reduction in restrictive practices and social validity or treatment acceptability of intervention components. However, few of the included studies employed robust statistical analyses to examine the significance of these results, and as many of the included studies did not implement experimental designs, reliability and validity of the studies is inconclusive at best. Quality assessment of the included articles implied limitations in the congruence, clarity, and organisation of the reports. The identified articles will be discussed in terms of: a) limitations to the research; b) study settings; c) rationale for selecting the model; d) treatment components in respect to the defining characteristics of setting-wide PBS; e) observed outcomes, and f) areas for future research.

Several limitations are described in the included studies. With respect to procedure, five studies involved case reports whereby no experimental control can be inferred (Allen et al., 2012; Evans et al., 2020; Freeman et al., 2005; Higgins, 2021; Riding, 2016). Additionally, four of the studies did not include reliability or validity checks (Allen et al., 2012; Evans et al., 2020; Higgins, 2021; Riding, 2016), while McGill and colleagues (2018) noted that some of the measures employed were of unknown reliability and validity. Allen and colleagues (2012) commented that no data on collateral changes for participants, such as adjustments to medication, were collected and thus an influence of these effects on the observed outcomes cannot be ruled out. Similarly, McGill and colleagues (2018) did not collect data on any interventions received by the control groups over the duration of the study, and results need to be interpreted with caution. However, the studies that did employ experimental designs observed what may be considered encouraging outcomes (Fuchs & Ravoux, 2019; McGill et al., 2018; Reid et al., 2003), echoing the findings of the case reports without experimental controls. This
exemplifies a core principle of PBS, flexibility in scientific practices, whereby PBS recognises the need for flexibility to accommodate the
study of practical efficacy and causal processes. Several authors cited difficulties with staff resources in relation to turnover and attrition (Fuchs & Ravoux, 2019; McGill et al., 2018) and availability (Evans et al., 2020; Higgins, 2021) although only the latter study collected specific data in relation to this. These findings reflect the ongoing problem of maintaining consistent staff support in disability organisations (Hatton et al., 2001; McCarron et al., 2019). Notably, Higgins (2021) observed increased staff retention following implementation of setting-wide PBS, suggesting that implementation of the model can potentially assuage these concerns. Allen and colleagues (2012) had similar difficulties with variation in the adults with ID population. However, as this was due to several discharges from acute services, and with new residents subsequently being referred in, this may be interpreted as an indicator of the efficacy of the model in improving problem behaviours and wellbeing.

Finally, five of the articles did not report on outcomes for the adults with ID involved in the intervention (Evans et al., 2020; Freeman et al., 2005; McKenzie et al., 2020; Reid et al., 2003; Riding, 2016) which juxtaposes the person-centred principles and value based of the setting-wide PBS model.

All of the included studies were based in adult disability services, with four involving clinical inpatient locations (Allen et al., 2012; Evans et al., 2020; Higgins, 2021; Riding, 2016), two in community based residential settings (McGill et al., 2018; Reid et al., 2003) and three in disability organisations where it is not specified if they were day/residential services, or both (Freeman et al., 2005; Fuchs & Ravoux, 2019; McKenzie et al., 2020). With the progression of the inclusion movement and a rights-based agenda in disability service provision, progressively more adults with intellectual disabilities are moving to community based residential settings. It is surprising that so few studies are available examining the implementation of this model in the community. This may be considered most pertinent to
Ireland, where PBS is mandated under the Health Act (2007), however none of the studies were conducted with an Irish population.

While there was some variation in how treatment components were selected (e.g., based on literature or needs analysis in the setting), there are a lot of similarities in the selected treatment components across the nine studies (see Table 2.4). For example, all the studies included a workforce development plan, incorporating various forms of frontline staff training (Evans et al., 2020; Fuchs & Ravoux, 2019; Higgins, 2021; McGill et al., 2018; Reid et al., 2003) and/or management or supervisor training (Allen et al., 2012; Evans et al., 2020; McGill et al., 2018; Reid et al., 2003). Furthermore, this component was an important theme in the successful adoption of setting-wide PBS in the qualitative study by McKenzie and colleagues (2020). This systemic approach to skills development is not identified as a specific treatment component for people with ID in the included studies. The inclusion of active supports (Allen et al., 2012; McGill et al., 2018) and person-centred planning (Allen et al., 2012; Freeman et al., 2005; Higgins, 2021) is reflective of a lifespan perspective and focus on comprehensive lifestyle change and quality of life; two core doctrines of the PBS model. This might be considered as an important adaption to the school-wide model, as taking a strong scholastic perspective may not be appropriate for adult populations. Several of the authors included some form of regular team meeting to support data driven feedback and progress review (Evans et al., 2020; Fuchs & Ravoux, 2019; McGill et al., 2018), which are identified as core components of a setting-wide PBS approach (Sugai & Horner, 2009).

Finally, some of the studies incorporated the setting-wide PBS model into organisational policies and practice documentation (Allen et al., 2012; Evans et al., 2020; Higgins, 2021) and qualitative feedback indicated that this was perceived by staff as an important element in intervention (McKenzie et al., 2020). However, not all authors adopted this approach, which may limit maintenance of the intervention after the research period
comes to an end. Future
studies should consider the development of intervention manuals that can be incorporated into organisational guidance documentation to maintain implementation fidelity and treatment outcomes (McGill et al., 2018).

Important outcomes were observed across the included studies in terms of person-centred and rights-based practice in disability service provision. Notably, three of the studies reported considerable decrease in the use of physical restraint (Allen et al., 2012; Higgins, 2021; Riding, 2016), with the deliberate and planned use of prone restraint being eliminated in the latter. In the wake of multiple controversies such as the Winterbourne (Flynn, 2012) and Áras Attracta (McCoy, Carroll, Judge, & McCormack, 2016) scandals where widespread abusive practices were unearthed, it is crucial that support staff are skilled in evidenced proactive rights-based practices. None of the included articles completed component analyses to explore which of the treatment components were most effective in producing the observed outcomes. One author, Riding (2016), stated that “in practice, it matters little and was most likely a combination of all three” (p. 182). However, qualitative feedback indicated that: a) a core foundation in the principles and values of PBS; b) good leadership that cascades from experts to facilitators to wider DSP throughout the organization; c) realising outcomes through evaluation and feedback, and d) embedding setting-wide PBS within the culture of the organisation through policies and practice documents were recognised by treatment agents as essential (Fuchs & Ravoux, 2019; McKenzie et al., 2020). Social validity surveys found high levels of acceptance and satisfaction with the model, but some staff recognised that it was resource intensive (Allen et al., 2012; Evans et al., 2020; McGill et al., 2018). This supports the need for embedding setting-wide PBS in organisational policy documentation so services can commission funding appropriately for future service planning and delivery.

Several of the authors highlight the need for future research to adopt more
rigorous empirical approaches in examining implementation and impact of setting-wide PBS with
adult populations. Results of the quality appraisal using the QATSDD (Sirriyeh et al., 2012) in the present study further supports this contention. The randomised controlled trial (RCT) is arguably the most scientifically rigorous method of hypothesis testing currently available, and accordingly is considered the gold standard design for evaluating intervention efficacy (Akobeng, 2005). While McGill and colleagues (2018) adopted this design, they and other authors highlight the need for future replication studies to provide greater validity and generalisability to the present findings.

There are currently no professional third level training programmes in Ireland in PBS, and there are a very limited number of practitioners with expertise in PBS in the state (Martin, 2015a). The cascade model cited by McKenzie and colleagues (2020) has been shown to be promising in other studies (MacDonald et al., 2018) therefore further research into the manualising of the model for disability settings is needed. This could allow efficient use of the available PBS expertise to work with building setting-wide PBS capacities across multiple settings. It is also important to consider further research into scaling up of the interventions so that setting-wide PBS might be applied regionally or nationally, with a view to embedding the culture into disability practices and building capacity across the state (Freeman et al., 2005; McGill et al., 2018). Finally, further research needs to incorporate measure of individuals with ID and staff outcomes, particularly in relation to workforce development programmes, to ensure a more comprehensive evaluation of the impact of the model.
Chapter 3

The Development of a Tier 1 Setting-Wide PBS Staff Training Manual
Chapter 1 described the rationale for further research in the implementation of a setting-wide model of PBS and Chapter 2 provided a systematic literature review of the extant literature on setting-wide PBS with adult populations. Results of the review indicate workforce development as one of the principal mechanisms of setting-wide PBS and evidenced that further focus is needed to develop manualised interventions to support implementation fidelity and maintenance of outcomes. The current chapter provides an examination of the elements considered relevant to the development of professional training manuals in setting-wide PBS including: a) central learning content and competencies that accurately reflect the values and principles of the paradigm; b) effective methods of delivery of knowledge and skills, and c) effective evaluation of training outcomes. The process of creating the programme manual for the current programme of research and accompanying resource dossier are described subsequently.

Considerable developments have been made in the UK with respect to identifying core training components and competency requirements in setting-wide PBS workforce development programmes, for them to be of an acceptable standard (Leitch, Jones, & MacDonald, 2020; Lowe et al., 2007; Positive Behavioural Support (PBS) Coalition UK, 2015; Tomlinson et al., 2017). Organisations have strived to focus resources on tier 3, or intensive individualised supports where acute needs mainly occur, rather than adopting a strategic whole organisational approach at all levels which reduce the burden of accessing specialised individualised supports (Leitch, Jones, & MacDonald, 2020). Therefore, the current chapter will focus on the description of a tier 1, or foundation training programme in setting-wide PBS for DSP based on published training standards, with the aim of providing an important gateway in the development of a suite of practical resources to support the widespread adoption and implementation of setting-wide PBS with adult populations.

Training standards with respect to knowledge (Leitch, Jones, & MacDonald, 2020;
Tomlinson et al., 2017), skills (Positive Behavioural Support (PBS) Coalition UK, 2015) and QOL domains (Schalock et al., 2015) are summarised in Table 3.1.
Table 3.1

Standards for Knowledge and Skills in Foundation Setting-wide PBS Programmes

<table>
<thead>
<tr>
<th>PBS Knowledge</th>
<th>PBS Skills</th>
<th>QOL Domains</th>
</tr>
</thead>
<tbody>
<tr>
<td>Values led services</td>
<td>Demonstrate dignity, respect, warmth, and compassion in all interactions</td>
<td>All domains</td>
</tr>
<tr>
<td></td>
<td>Provide individualised supports</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Coordinate and sustain participation in community activities/events</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Facilitate and support relationship development</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Coordinate and sustain meaningful participation in activities of daily living</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Coordinate and sustain meaningful decision making</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Coordinate and sustain opportunities for learning and development</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Facilitate and support quality of life focused exchanges and actions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Minimise any life restrictions and use positive rights-based strategies when needed in emergency/crisis situations</td>
<td></td>
</tr>
<tr>
<td>Knowing the person</td>
<td>Establish an affiliation with the person (evidenced by observations)</td>
<td>Personal development</td>
</tr>
<tr>
<td></td>
<td>Recognise and define how the person expresses satisfaction and disapproval in events and interactions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Facilitate the person to access preferences in balance with needed activities to maintain good quality of life</td>
<td>Self-determination</td>
</tr>
<tr>
<td></td>
<td>Provide individualised supports across a variety of activities and environments</td>
<td></td>
</tr>
<tr>
<td>Individualised supports based on capacities and personal aspirations</td>
<td>Gather information about a person’s individual capacities, needs, wants and dreams</td>
<td>Personal Development</td>
</tr>
<tr>
<td></td>
<td>Facilitate the development of a personalised plan to achieve significant life goals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Progress review of personal goals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check for balance across implementation of all types of personalised goals across QOL domains</td>
<td></td>
</tr>
<tr>
<td>Clear roles and effective teamwork</td>
<td>Show appropriate amount of individualised support</td>
<td>All QOL domains</td>
</tr>
<tr>
<td></td>
<td>Demonstrate an understanding of the distinction between individualised active supports, and meeting basic care needs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Provide key working supports for at least one individual</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Engage in peer support with work colleagues</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Active engagement in effective teamwork through team meetings and supervision</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sustain appropriate work schedules</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Engage in continuing reflective practice</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Look for support from colleagues/supervisors/organisation where required</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Demonstrate awareness of potential work-related conflicts of interest and communicate these in supervision</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Maintain physical, psychological and emotional health</td>
<td></td>
</tr>
<tr>
<td>Supporting Communication</td>
<td>Demonstrate proficiency in effective individualised total communication approaches with individuals supported</td>
<td>Interpersonal relationships</td>
</tr>
<tr>
<td></td>
<td>Facilitate, develop and implement appropriate systems of communication for the individual supported</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Participate in developing clear descriptions of individual communication styles of person’s supported</td>
<td>Self determination</td>
</tr>
<tr>
<td></td>
<td>Use suitable communication approaches in team interactions</td>
<td></td>
</tr>
<tr>
<td>Supporting Choice</td>
<td>Research and organise experiences to support the individual to make informed choices with regards to personal activities</td>
<td>Self-determination</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td></td>
<td>Arrange opportunities for the individual supported to make meaningful decisions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Support the person to develop choice making skills</td>
<td></td>
</tr>
<tr>
<td>Supporting physical and mental health</td>
<td>Implement individual health plans which include proficient administration of medication</td>
<td>Emotional well-being</td>
</tr>
<tr>
<td></td>
<td>Individualised supports for maintaining physical health including personal care routines and healthy lifestyle habits</td>
<td>Physical Wellbeing</td>
</tr>
<tr>
<td></td>
<td>Facilitate equitable access to health care systems</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recognise and infer a person’s physical/emotional state from their total communication behaviours</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Maintain efficient health-related data systems and records</td>
<td></td>
</tr>
<tr>
<td>Supporting relationships with family, friends, and wider community</td>
<td>Request and advocate for organisational support where required</td>
<td>Interpersonal relationships</td>
</tr>
<tr>
<td></td>
<td>Active engagement with circle of support</td>
<td>Social inclusion</td>
</tr>
<tr>
<td></td>
<td>Enable person supported to develop and sustain meaningful relationships</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use a variety of means to share information while respecting privacy and dignity</td>
<td></td>
</tr>
<tr>
<td>Supporting safe, consistent, and predictable environments</td>
<td>Engage with the individuals circle of support to inform ‘best interest’ decision making</td>
<td>Material well-being</td>
</tr>
<tr>
<td></td>
<td>Employ supports to enable the person to feel safe and secure in their environment (e.g. visual schedules, social stories,</td>
<td>Physical well-being</td>
</tr>
<tr>
<td></td>
<td>Visual staff roster etc)</td>
<td>Rights</td>
</tr>
<tr>
<td></td>
<td>Assess and alter environmental factors that may provide a risk element for distressed behaviours</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Implement individualised coping strategies for environments that cannot be avoided or altered</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Create individualised activity schedules with the person supported that anchor routine activities and include a range of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>available options to support choice making and flexibility</td>
<td></td>
</tr>
<tr>
<td>Supporting appropriate levels of participation in meaningful activity</td>
<td>Assess individual preferences and enable opportunities for the person supported to include these in everyday life</td>
<td>Interpersonal relationships</td>
</tr>
<tr>
<td></td>
<td>Maintain an appropriate balance between meaningful favoured activities and essential activities such as meals and personal care routines</td>
<td>Social inclusion</td>
</tr>
<tr>
<td></td>
<td>Support the person to develop and maintain their independence in daily activities at a level they can sustain</td>
<td>Personal development</td>
</tr>
<tr>
<td></td>
<td>Use task analysis to dissect complex activities into a sequence of tasks that the individual can be supported to learn with support</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Employ appropriate levels of prompts and cues to support the individual to engage in meaningful activities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Introduce appropriate motivators for less or non-preferred necessary activities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Review individualised schedules to ensure that person supported is meaningfully engaged with appropriate supports throughout their day</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Maintain useful records to allow for effective reviews of meaningful engagement</td>
<td></td>
</tr>
<tr>
<td>Knowing and understanding relevant legislation</td>
<td>Understand and uphold key features in current relevant regulations</td>
<td>Rights</td>
</tr>
<tr>
<td></td>
<td>Engage in advocacy and supported decision making with the person supported in activities of daily living and choice making</td>
<td>Material wellbeing</td>
</tr>
<tr>
<td>A commitment to behaviour skills teaching</td>
<td>Engage in continuous professional development relevant to direct support personnel (DSP)</td>
<td>All QOL domains</td>
</tr>
<tr>
<td></td>
<td>Engage in specific training related to the implementation and maintenance of individual person centred and positive behaviour support plans</td>
<td></td>
</tr>
</tbody>
</table>
Effective training delivery methods for staff development in PBS that result in practice change are well evidenced (Denne et al., 2015; McClean et al., 2005; Reid et al., 2003). Research indicates that training methods need to include a blend of didactic instruction to provide the core information, interactive skills based training in the work-setting to support skill development and implementation, and coaching support to promote maintenance and generalisation of these skills (Denne et al., 2015). PBS training standards also state that learning must be proficiency-based and employ a range of pedagogical approaches, such as classroom-based, e-learning, self-directed and practice-based learning, and assessment. It is evidenced that foundation level programmes should involve at least 120 learning hours (Tomlinson et al., 2017), reflecting some of the longitudinal programmes described previously in Chapter 2 (Freeman et al., 2005; McGill et al., 2018; Reid et al., 2003). There is growing support for the use of e-learning or online platforms for the instruction element of training, as it allows for efficiency and flexibility in the delivery of the programme and may lessen demand in regard to releasing DSP from work settings (Allen et al., 2008; Sarre et al., 2018). The impact of the Covid-19 pandemic on the delivery of education programmes since 2020 has led to widespread adoption of virtual learning environments across academic and vocational settings (Alqahtani & Rajkhan, 2020; Khan et al., 2020; Peñarrubia-Lozano et al., 2021; Torres Martín et al., 2021). Early research indicates that blended learning approaches involving e-learning and in-vivo elements are both more effective, and favoured, by students and participants (Alqahtani & Rajkhan, 2020; Peñarrubia-Lozano et al., 2021).
Behavioural skills teaching, or BST, is a well-established evidence-based approach to skills development for practitioners and direct support personnel (Dib & Sturmey, 2012; Gormley, Healy, O'Sullivan, et al., 2019). Typically, BST involves teaching specific procedures using four phases: 1) instruction; 2) modelling; 3) rehearsal, and 4) feedback (Dib & Sturmey, 2012). There is ample support for the effectiveness of this approach in skill development across a range of evidence-based practices, such as discrete-trial teaching (Sarokoff & Sturmey, 2004), assistive prompting skills (Parsons et al., 2012), and preference assessments (Maffei-Almodovar & Sturmey, 2018). There is also an emerging and developing evidence base for the use of BST via telehealth (Carnett et al., 2021; Rispoli & Machalicek, 2020) which may be attractive to service providers due to limited access to local professional trainers and resource constraints.

Parsons and colleagues (2012) propose the addition of an on-the-job or in-vivo training component to BST, to increase the prospect that performance of the target skill acquired during the instruction generalises to work settings. In BST, there is a focus on demonstrating the skills to a predefined mastery criterion for the skill to be performed accurately (Davis et al., 2019; Sarokoff & Sturmey, 2004). This is especially significant when the skills are being taught to DSP that are involved in the provision of supports to vulnerable adults who may engage in behaviours that present a risk to themselves or others (Beadle-Brown et al., 2012; Bennett et al., 2005; Bowring et al., 2017). In healthcare, human reliability analysis is being adopted to improve patient healthcare through reduction of human error in complex procedures (Lane et al., 2006; Reddy et al., 2020). A specific human reliability technique employed to study how people complete specific tasks is called “task analysis” (Kirwan & Ainsworth, 1992), which is like the approach adopted in the initial instruction phase of behavioural skills teaching.

Hierarchical task analysis (HTA) is where a performance goal is broken down into a sequence of prerequisite sub-goals and has been evidenced as an effective method of skill
development and maintenance in a variety of
clinical settings (Hollnagel, 2021; Phipps et al., 2008; Reddy et al., 2020). To date, this approach to improving performance of complex skills has not been applied outside of medical or healthcare settings. The incorporation of BST and HTA may provide a robust approach for skill development for DSP in social care settings that can be manualised to promote widespread workforce development.

Quality in training is a fundamental factor to consider when developing and implementing educational programmes. The Kirkpatrick Model (Kirkpatrick & Kirkpatrick, 2016) is a recognised standard for evaluating training effectiveness. This model has frequently been adopted to evaluate training programmes in industry settings (Jones et al., 2018; Paull et al., 2016; Smidt et al., 2009). There are four levels in the model summarised in Table 3.2. Smidt and colleagues (2009) in their systemic review of the use of the Kirkpatrick model in disability settings, reported that none of the included studies incorporated all four levels of the model in the evaluation of training effectiveness. The authors cautioned that if programmes are of poor quality or are not adequately evaluated this can result in wasted resources, or DSP being held responsible for poor follow through (Smidt et al., 2009).
Table 3.2

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Reaction Evaluation of the qualitative experiences of participants</td>
<td>Post-course training questionnaire/Interview</td>
</tr>
<tr>
<td>2.</td>
<td>Learning Measure of changes in participants knowledge and/or skills in the learning environment</td>
<td>Written assessment and/or demonstration of skills</td>
</tr>
<tr>
<td>3.</td>
<td>Behaviour Examination of participants performance of acquired skills/knowledge in the workplace</td>
<td>Written assessment and/or demonstration of skills in the work setting</td>
</tr>
<tr>
<td>4.</td>
<td>Results Measure of impact of training</td>
<td>Range of measures examining clinical and cost effectiveness of training in setting (e.g., staff behaviour, service user behaviour, staff turnover etc.)</td>
</tr>
</tbody>
</table>

The aim of the current chapter was to methodically describe the development of a training manual in tier 1 setting-wide PBS for direct support personnel. The manual included content and competencies procured from published standards in PBS training (Positive Behavioural Support (PBS) Coalition UK, 2015). Instructions for delivering the programme provided detailed guidance in the use of effective training methodologies of BST and HTA. Finally, the manual included all four levels of a globally recognised training evaluation model, the Kirkpatrick Model (Kirkpatrick & Kirkpatrick, 2016) to ensure that outcomes of training were adequately evaluated.

**Methods**

The lead researcher held a BA (Hons) in Psychology, a MA in Applied Behaviour Analysis, two Level 6 QQI certificates in training and education and 18 years of experience working and delivering training in disability services and therefore met the professional requirements to develop the training programme.

*Step 1: Contextual Fit*
While the aim of this chapter was to describe the design of a workforce development Manual for tier 1 setting-wide PBS implementation across a range of settings and services, it was important that contextual fit for the service provider/organisation was considered to ensure the relevance of the programme to the intended participants. In the present study, the lead researcher met with the senior management team of the host organisation in November 2019 to discuss and plan a workforce development strategy that was considered a good contextual fit. For example, the current strategic focus of the organization in terms of policy implementation was incorporated in the training content. The frequency and length of training in respect to the practicalities of releasing direct support staff from their usual duties, and which staff would be most fitting to be prioritized for the programme was deliberated with the organisational steering group. Initially, a classroom-based workshop approach for the delivery of the programme was agreed. This was revised to an e-learning format in March 2020 due to Covid-19 restrictions imposed by public health authorities. A training and coaching delivery schedule was developed for this online delivery format and is summarised in Table 3.3.
Table 3.3

Tier 1 Setting-Wide PBS Workforce Development Programme Schedule

<table>
<thead>
<tr>
<th>Session #</th>
<th>Topic</th>
<th>Duration</th>
<th>Format</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction to SWPBS – values and principles</td>
<td>Full day (8 hours)</td>
<td>Online – live session</td>
<td>Week 1 – Day 1 of 2-day introduction</td>
</tr>
<tr>
<td>2</td>
<td>Goal setting, core skills and toolkit for</td>
<td>Half day (4 hours)</td>
<td>Online – live session</td>
<td>Week 1 Day 2 of 2-day introduction</td>
</tr>
<tr>
<td></td>
<td>implementation and evaluation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2a</td>
<td>Coaching and mentoring/BST session</td>
<td>1-2 hours</td>
<td>Online – live session</td>
<td>Week 3</td>
</tr>
<tr>
<td>3</td>
<td>Activities and skill development</td>
<td>½ day (4 hours)</td>
<td>Online – live session</td>
<td>Week 5</td>
</tr>
<tr>
<td>3a</td>
<td>Coaching and mentoring/BST session</td>
<td>1-2 hours</td>
<td>Online – live session</td>
<td>Week 7</td>
</tr>
<tr>
<td>4</td>
<td>Capable environments and community inclusion</td>
<td>½ day (4 hours)</td>
<td>Online – live session</td>
<td>Week 9</td>
</tr>
<tr>
<td>4a</td>
<td>Coaching and mentoring/BST session</td>
<td>1 – 2 hours</td>
<td>Online – live session</td>
<td>Week 11</td>
</tr>
<tr>
<td>5</td>
<td>Interpersonal relationships</td>
<td>½ day (4 hours)</td>
<td>Online – live session</td>
<td>Week 13</td>
</tr>
<tr>
<td>5a</td>
<td>Coaching and mentoring/BST session</td>
<td>1 – 2 hours</td>
<td>Online – live session</td>
<td>Week 15</td>
</tr>
<tr>
<td>6</td>
<td>Communication</td>
<td>½ day (4 hours)</td>
<td>Online – live session</td>
<td>Week 17</td>
</tr>
<tr>
<td>6a</td>
<td>Coaching and mentoring/BST session</td>
<td>1 – 2 hours</td>
<td>Online – live session</td>
<td>Week 19</td>
</tr>
<tr>
<td>7</td>
<td>Health and wellbeing</td>
<td>½ day (4 hours)</td>
<td>Online – live session</td>
<td>Week 21</td>
</tr>
<tr>
<td>7a</td>
<td>Coaching and mentoring/BST session</td>
<td>1 – 2 hours</td>
<td>Online – live session</td>
<td>Week 23</td>
</tr>
<tr>
<td>8</td>
<td>Key working skills</td>
<td>½ day (4 hours)</td>
<td>Online – live session</td>
<td>Week 25</td>
</tr>
<tr>
<td>8a</td>
<td>Coaching and mentoring/BST session</td>
<td>1 – 2 hours</td>
<td>Online – live session</td>
<td>Week 27</td>
</tr>
<tr>
<td>9</td>
<td>Reflections and review</td>
<td>½ day (4 hours)</td>
<td>Online – live session</td>
<td>Week 29</td>
</tr>
</tbody>
</table>
**Step 2: Development of E-Learning Setting-Wide PBS Knowledge Content**

Learning objectives, learning outcomes and session plans that aligned with the previously described PBS training standards and QOL domains were developed for each session. These are presented in Table 3.4. A series of PowerPoint presentations and related learning activities were prepared for each session based on the learning outcomes. A non-standardised setting-wide appraisal tool was developed to guide participants in identifying practice areas for development in their individual work settings. This template is described in Table 3.5.
### Table 3.4

**Learning Objectives, Activities and Outcomes for Tier 1 Setting-wide PBS Workforce Development Programme**

<table>
<thead>
<tr>
<th>Session</th>
<th>Learning objectives (knowledge)</th>
<th>Learning activities</th>
<th>Evaluation of outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Participants will successfully recognise the main causes of ‘distressed behaviour’&lt;br&gt;Participants will correctly recognise the core values and principles of SWPBS&lt;br&gt;Participants will successfully identify the key areas of social care practice associated with improved Quality of Life outcomes for people with ID&lt;br&gt;Participants will correctly identify the core competencies of practice leadership</td>
<td>Instruction:&lt;br&gt;• Definition of distressed behaviour&lt;br&gt;• Co-occurrence, persistence, characteristics&lt;br&gt;• Biological, psycho-social, and environmental causes of distressed behaviour&lt;br&gt;• Functions of distress&lt;br&gt;• Core values of PBS&lt;br&gt;• Development of PBS&lt;br&gt;• Multi-tiered model of SWPBS&lt;br&gt;• Local PBS policy (where relevant)&lt;br&gt;• Brief overview of 8 core QOL domains and links to social care practice areas&lt;br&gt;• Definition of practice leadership and theory of process change&lt;br&gt;• Description of core skills related to practice leadership</td>
<td>Rehearsal:&lt;br&gt;• Knowledge quiz&lt;br&gt;• Practice learning journal&lt;br&gt;Feedback:&lt;br&gt;• Quiz results&lt;br&gt;• In situ supervision&lt;br&gt;Group Work:&lt;br&gt;• Prepare a brief introduction to PBS presentation for the next team meeting&lt;br&gt;• Group discussion: PBS culture – views of the core PBS principles, disability regulations and how they relate to the organisation&lt;br&gt;• Group activity: Role play – demonstration of practice leadership core skills</td>
</tr>
<tr>
<td>2</td>
<td>Participants will successfully summarise the theory of process change (cascade model of intervention)&lt;br&gt;Participants will successfully complete a SWPBS review of their work setting&lt;br&gt;Participants will identify key measurement tools for evaluation of outcomes in SWPBS&lt;br&gt;Participants will develop a list of process goals for their work setting&lt;br&gt;Participants will develop a PSR checklist based on their identified goals for their individual work setting&lt;br&gt;Participants will apply a model of reflective practice</td>
<td>Online instruction:&lt;br&gt;• Introduction to theory of process change and infographic&lt;br&gt;• Detailed description of core Tier 1 PBS values and principles&lt;br&gt;• Introduction to goal setting&lt;br&gt;• Key outcome measurement tools&lt;br&gt;  o PSR&lt;br&gt;  o QOL&lt;br&gt;  o ABC&lt;br&gt;  o ASM/EMAC-R&lt;br&gt;• Introduction and definition of reflective practice&lt;br&gt;• Description of three reflective practice models:&lt;br&gt;  o Kolb&lt;br&gt;  o Gibb&lt;br&gt;  o Atkins &amp; Murphy&lt;br&gt;Group Work:&lt;br&gt;• Discussion of practice review tool for Tier 1 PBS in work setting&lt;br&gt;• Activity: Identify practice development areas in work setting based on Tier 1 PBS</td>
<td>Rehearsal:&lt;br&gt;• Knowledge quiz&lt;br&gt;• Practice learning journal&lt;br&gt;• BST – Using model of reflective practice in peer supervision (HTA)&lt;br&gt;Feedback:&lt;br&gt;• Quiz results&lt;br&gt;• BST mastery criterion 95%&lt;br&gt;• In situ supervision</td>
</tr>
</tbody>
</table>
### Chapter 3

<table>
<thead>
<tr>
<th>Participants</th>
<th>Activity</th>
<th>Rehearsal</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Participants will successfully describe what is meant by “active supports”</td>
<td>Activity: Complete a PSR checklist based on sample vignette</td>
</tr>
<tr>
<td>Participants will successfully develop an activity support plan for a person they support</td>
<td>Introduction to active supports and the active support manual</td>
<td>Practice learning journal</td>
</tr>
<tr>
<td>Participants will successfully write a task analysis for an activity of daily living</td>
<td>Role of the keyworker</td>
<td>BST – Writing an active support timetable (HTA)</td>
</tr>
<tr>
<td>Participants will successfully implement a task analysis for an activity of daily living</td>
<td>Guideline principles of the active support approach</td>
<td>BST – Task analysis (HTA)</td>
</tr>
<tr>
<td>Participants will successfully demonstrate the use of reinforcement to promote skill development</td>
<td>Introduction to activity plan template</td>
<td>BST – Using reinforcement (HTA)</td>
</tr>
<tr>
<td></td>
<td>Steps in developing an activity plan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ways of giving support – use of prompts</td>
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<tr>
<td></td>
<td>Demonstration: how to access visuals for task analysis using google image search</td>
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<tr>
<td></td>
<td>Introduction to reinforcement</td>
<td></td>
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<tr>
<td></td>
<td>Types of reinforcement</td>
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<tr>
<td></td>
<td>Tips for effective reinforcement</td>
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<tr>
<td></td>
<td>Regulation and activity plans</td>
<td></td>
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<tr>
<td></td>
<td>Troubleshooting active supports</td>
<td></td>
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<tr>
<td></td>
<td>Group Work:</td>
<td>Feedback:</td>
</tr>
<tr>
<td></td>
<td>Role play/BST - Writing an activity plan</td>
<td>Quiz results</td>
</tr>
<tr>
<td></td>
<td>Role play/BST – Task analysis</td>
<td>BST mastery criterion 95%</td>
</tr>
<tr>
<td></td>
<td>Role play/BST – using reinforcement to motivate skill development</td>
<td>In situ supervision</td>
</tr>
<tr>
<td></td>
<td>Instruction:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Definition of disability</td>
<td></td>
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<td></td>
<td>Core models of disability</td>
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<td></td>
<td>Changes in disability practice</td>
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<tr>
<td></td>
<td>Overview of capable environments</td>
<td></td>
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<tr>
<td></td>
<td>Creating a welcoming home environment</td>
<td></td>
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<td></td>
<td>Low arousal environments</td>
<td></td>
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<tr>
<td></td>
<td>Introduction to community inclusion</td>
<td></td>
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<tr>
<td></td>
<td>Definition of accessibility</td>
<td></td>
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<tr>
<td></td>
<td>Safe, predictable environments</td>
<td></td>
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<td></td>
<td>Positive risk taking</td>
<td></td>
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<td></td>
<td>Group Work:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Discussion – what makes a home?</td>
<td>Quiz results</td>
</tr>
<tr>
<td></td>
<td>Group activity – identify ways you can lower the arousal levels in the environment shown</td>
<td>In situ supervision</td>
</tr>
<tr>
<td></td>
<td>Group discussion: share experiences of promoting community inclusion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group discussion: Potential accessibility solutions for someone you support</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Participants will successfully describe the medical and social models of disability</td>
<td></td>
</tr>
<tr>
<td>Participants will successfully define the term accessibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participants will successfully understand what is meant by a ‘low arousal’ environment and ‘low arousal’ approach</td>
<td></td>
<td></td>
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<tr>
<td>Participants will successfully describe community inclusion</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Rehearsal: Knowledge quiz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Practice learning journal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Feedback: Quiz results</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In situ supervision</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Participants will successfully complete a “circle of support” template</td>
<td></td>
</tr>
<tr>
<td>Participants will develop a task analysis for arranging a family/friend visit</td>
<td></td>
<td></td>
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<tr>
<td>Participants will successfully outline the model of positive relationships</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rehearsal: Knowledge quiz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BST – Arranging a family/friend visit (HTA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BST – Writing a social story</td>
<td></td>
</tr>
</tbody>
</table>
Participants will successfully develop a social story for a person they support

Participants will identify key factors in maintaining friendships/relationships

Participants will successfully write a social story for the person they support

- Introduction to model of positive relationships and core components – recognising individuality, sharing the moment, connecting, and sharing the message
- Introduction to social stories
- Examples of social stories – greeting others, public and private spaces
- Regulations/legislation
- Keys to maintaining relationships
- Supporting decision making

Group work:
- Activity - completing a circle of support template
- Activity – arranging a family/friend visit
- Discussion – video “a day in the life” discuss in terms of the model of positive relationships
- Activity – Writing a social story
- Discussion – engaging with circles of support for supporting decision making

Instruction:
- Definition of communication
- Core communication support needs for people with ID
- Main difficulties experienced by people with ID/PMID
- Guidelines for supporting communication
- Methods of effective communication
- Assisted communication approaches
- Types of communication supports
- Trouble-shooting communication support
- Increasing opportunities for communication
- Ways emotions are experienced
- Introduction to emotional regulation – communicating emotions
- Attunement and co-regulation
- Introduction to intensive interaction
- Core concepts of intensive interaction

Group work:
- Video “how can I communicate better with people with ID” and discussion of video
- Group activity – role play: interpreting non-verbal communication
- Group activity - Implementing PECS Phase 1
- Group activity – role play: intensive interaction

Instruction:
- Definition of health
- Health considerations for people with ID – physical and mental health
- Communication and health
- Access to healthcare – equality and equity

Rehearsal:
- Knowledge quiz
- BST – Interpreting non-verbal communication (HTA)
- BST – PECS Phase 1 (HTA)
- Practice learning journal

Feedback:
- Quiz results
- In situ supervision

Participants will successfully describe the term “communication”

Participants will identify the main difficulties people with disabilities can experience with communication

Participants will successfully recognise a range of communication supports for people with ID

Participants will successfully identify the core ways we communicate, experience, and manage emotions

Participants will successfully explain what is meant by ‘intensive interaction’

Participants will successfully describe the term “health” and the specific health related issues experienced by people with ID

Participants will successfully explain equity and equality issues in healthcare access for people with ID

Participants will identify critical factors in maintaining friendships/relationships

Participants will successfully write a social story for the person they support

- Instruction to model of positive relationships and core components – recognising individuality, sharing the moment, connecting, and sharing the message
- Introduction to social stories
- Examples of social stories – greeting others, public and private spaces
- Regulations/legislation
- Keys to maintaining relationships
- Supporting decision making

Group work:
- Activity - completing a circle of support template
- Activity – arranging a family/friend visit
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Group work:
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- Group activity – role play: intensive interaction

Instruction:
- Definition of health
- Health considerations for people with ID – physical and mental health
- Communication and health
- Access to healthcare – equality and equity

Rehearsal:
- Knowledge quiz
- Practice learning journal

Feedback:
- Quiz results
Participants will successfully recognise the core components of the golden health triangle

Participants will successfully describe health promotion support needs for people with ID

Participants will successfully describe ways of supporting the specific health needs of the person they support

Participants will recognise methods of maintaining appropriate health records for the person they support

8

Participants will successfully describe the term keyworker and identify the importance of that role in social care practice

Participants will successfully identify core skills required by keyworkers

Participants will successfully recognise the benefits of evidence-based practice

Participants will successfully identify what is meant by the least restrictive approach and rights-based supports

Participants will successfully outline strategies for effective teamwork

Participants will successfully recognise strategies for maintaining wellbeing through work-life balance

Participants will successfully demonstrate skills in engaging in team meetings and supervision

9

Participants will successfully demonstrate skills in employing reflective practice models to reflect on their learning throughout the programme

Participants will employ progress review tools to measure outcomes achieved following completion of training

Instruction:
• Definition of a keyworker
• Importance of keyworkers
• Core components of key working
• Getting to know the person you support
• Specific skills: autism awareness. Trauma informed practice, working with distressed behaviours
• Definition of evidence-based practice
• Benefits of evidence-based practice
• The least restrictive approach
• Risk management
• Legislation and regulations – Health Act 2007, National Standards (HIQA), ADMC 2015
• Tips for effective teamworking
• Engaging in supervision and team meetings

Group work:
• Video – experiencing autism and group discussion
• Exercise – recognising types of rights restrictions
• Discussion – restoring rights/alternatives to restrictive practice
• Activity: role play – supporting decision making
• Activity: role play – effective team meeting/supervision session

Rehearsal:
• Knowledge quiz
• BST – Facilitating a team meeting (HTA)
• BST – Reflective practice (HTA)
• Practice learning journal

Feedback:
• Quiz results
• In situ supervision

Participants will successfully recognise the core components of the golden health triangle

Participants will successfully describe health promotion support needs for people with ID

Participants will successfully describe ways of supporting the specific health needs of the person they support

Participants will recognise methods of maintaining appropriate health records for the person they support

• Promoting equitable access to healthcare
• Introduction to the golden health triangle – sleep, exercise, nutrition
• Introduction to health promotion
• Planning supports for specific health needs
• Community healthcare services
• Implementing therapeutic recommendations

Group work:
• Group discussion – understanding how people communicate pain and wellness
• Group discussion – advocacy approaches for healthcare support
• Group activity – watch video on eating experiences of people with disabilities and discuss
• Group activity – completing a record for a health visit (vignette)

Rehearsal:
• Knowledge quiz
• BST – Facilitating a team meeting (HTA)
• BST – Reflective practice (HTA)
• Practice learning journal

Feedback:
• Quiz results
• In situ supervision

Participants will successfully recognise the term keyworker and identify the importance of that role in social care practice

Participants will successfully identify core skills required by keyworkers

Participants will successfully recognise the benefits of evidence-based practice

Participants will successfully identify what is meant by the least restrictive approach and rights-based supports

Participants will successfully outline strategies for effective teamwork

Participants will successfully recognise strategies for maintaining wellbeing through work-life balance

Participants will successfully demonstrate skills in engaging in team meetings and supervision

Instruction:
• Definition of a keyworker
• Importance of keyworkers
• Core components of key working
• Getting to know the person you support
• Specific skills: autism awareness. Trauma informed practice, working with distressed behaviours
• Definition of evidence-based practice
• Benefits of evidence-based practice
• The least restrictive approach
• Risk management
• Legislation and regulations – Health Act 2007, National Standards (HIQA), ADMC 2015
• Tips for effective teamworking
• Engaging in supervision and team meetings

Group work:
• Video – experiencing autism and group discussion
• Exercise – recognising types of rights restrictions
• Discussion – restoring rights/alternatives to restrictive practice
• Activity: role play – supporting decision making
• Activity: role play – effective team meeting/supervision session

Rehearsal:
• Knowledge quiz
• BST – Facilitating a team meeting (HTA)
• BST – Reflective practice (HTA)
• Practice learning journal

Feedback:
• Quiz results
• In situ supervision

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• Benefits of evidence-based practice
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• Legislation and regulations – Health Act 2007, National Standards (HIQA), ADMC 2015
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Rehearsal:
• Knowledge quiz
• BST – Facilitating a team meeting (HTA)
• BST – Reflective practice (HTA)
• Practice learning journal

Feedback:
• Quiz results
• In situ supervision
Table 3.5

The Non-Standardised Tier 1 Setting-Wide PBS Appraisal Tool

<table>
<thead>
<tr>
<th>Location:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completed by:</td>
<td></td>
</tr>
</tbody>
</table>

1. Values led service:
   - Is day to day service provision consistent with a human rights based, person centred approach? What could be improved?

2. Knowing the person:
   - Are people supported by familiar and consistent staff who understand the person, know how they communicate, what they enjoy? If not, what could be improved?

3. Individualised supports based on capacities and personal aspirations:
   - Are people’s individual needs, interests, choices and life goals met and supported, free from any restrictions, through their day-to-day supports? If not, what could be improved?

4. Clear roles and effective teamwork:
   - Do support staff have the skills, capacities and supports to provide values led services? What could be improved?

5. Supporting communication:
   - Are people’s individual communication methods known, used and encouraged by staff in daily service provision? What could be improved?

6. Supporting choice:
   - Are people supported to make informed choices in their everyday activities, healthcare decisions, relationships, and life goals? What could be improved?

7. Supporting physical and mental health:
   - Are people consistently supported to maintain their physical and mental health, and actively engage in healthcare and wellbeing supports where needed? What could be improved?

8. Supporting relationships with family, friends, and the wider community:
   - Are people supported to be actively engaged with their circle of support to develop and sustain their relationships? What could be improved?

9. Supporting safe, consistent, and predictable environments:
   - Are people supported to feel safe, valued and respected in their home and work environments? What could be improved?

10. Supporting appropriate levels of participation in meaningful activity:
    - Are people actively supported and engaged in meaningful activities that reflect their individual choices and goals throughout the day? What could be improved?

11. Knowing and understanding relevant legislation:
    - Are support staff knowledgeable of the regulations and policies that govern their practice? What could be improved?

12. A commitment to behaviour skills teaching:
    - Are staff engaged in continuous professional development relevant to the individuals they support? What could be improved?
A study of current literature and regulations in each of the knowledge areas was completed by the researcher to develop learning materials. Individual session plans and checklists were developed for fidelity in training delivery. The Microsoft Teams application (Microsoft, 2020) was used to host the e-learning programme. The lead researcher created a team for the programme, and subsequently developed a channel for each of the nine training sessions. PowerPoint slides were uploaded to the platform and any supporting resources or materials required to deliver the session.

The Kirkpatrick model of evaluation (Kirkpatrick & Kirkpatrick, 2016) was employed for the development of outcome measures for training in the form of pre and post-session knowledge tests related to the learning objectives identified for each module. Questions adopted a multiple-choice format and an answer key was created for each test. These tests were then uploaded to each relevant channel using Microsoft Forms. Microsoft teams contained an option to embed these forms into the platform and collate participant outcomes. Knowledge tests are available with supplementary material.

**Step 3: Development of Setting-Wide PBS Behavioural Skills Teaching Resources**

A set of core competencies were identified for the programme based on the previously described PBS competency framework for direct support workers (Positive Behavioural Support (PBS) Coalition UK, 2015). A useful strategy for developing effective teaching resources is the hierarchical task analysis or HTA (Stanton, 2006). HTA details a procedure in terms of its specific goals, subgoals and plans. The steps involved in HTA are detailed in Table 3.6 (http://digital.ahrq.gov). Using this method, a procedure for each core competency was developed by the lead researcher (see Table 3.7). Lastly, a data recording form for each competency was included in the individual documents. The completed procedures were reviewed
Table 3.6

*Hierarchical Task Analysis Process*

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Definition of task</td>
<td>Detailed description of the skill including the function of the task analysis</td>
</tr>
<tr>
<td>2. Data Collection</td>
<td>Review of relevant literature, observation of procedure etc.</td>
</tr>
<tr>
<td>3. Function of the task</td>
<td>Clear definition of the rationale for the task or skill</td>
</tr>
<tr>
<td>4. Determine sub-goals</td>
<td>Deconstruction of the overall function into subsequent sub-goals</td>
</tr>
<tr>
<td>5. Sub-goal decomposition</td>
<td>Analysis of subgoals into supplementary sub-goals and operations</td>
</tr>
<tr>
<td>6. Plans analysis</td>
<td>Explanation of how goals are accomplished</td>
</tr>
</tbody>
</table>

Table 3.7

*List of Tier 1 Setting-Wide PBS Workforce Development Programme Competencies*

<table>
<thead>
<tr>
<th>Session No.</th>
<th>Competency</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Engaging in a model of reflective practice</td>
</tr>
<tr>
<td>3</td>
<td>Developing an active support timetable</td>
</tr>
<tr>
<td>3</td>
<td>Using reinforcement to establish and maintain a skill</td>
</tr>
<tr>
<td>3</td>
<td>Using task analysis to teach a skill</td>
</tr>
<tr>
<td>5</td>
<td>Facilitating a home visit</td>
</tr>
<tr>
<td>5</td>
<td>Using social stories to teach social skills</td>
</tr>
<tr>
<td>5</td>
<td>Non-verbal communication supports</td>
</tr>
<tr>
<td>6</td>
<td>Visual functional communication supports</td>
</tr>
<tr>
<td>8</td>
<td>Facilitating a team meeting</td>
</tr>
</tbody>
</table>

by the principal investigator only and were not examined or tested explicitly for correspondence with real-world application. These procedures are available in supplementary material.

**Step 4: Administration of the Training Programme**

A series of individual session plans for the knowledge components of each programme module were developed. The aim of these instructions was to promote fidelity in training implementation across individual trainers and organisations. Each session plan included: a) an overview of the module; b) a schedule of delivery; c) a numbered slide list; d) a list of resources, and e) detailed instructions for the trainer. These session plans are available as
supplementary
material. Finally, a checklist was developed for each session to provide a fidelity record for delivery of the programme.
Chapter 4

Implementation of Setting-Wide Positive Behaviour Support in an Adult Disability Service: A Cluster Randomised Control Trial
Global best practice standards for people with ID maintain that all persons have the right to access the best available services in social, physical, educational, and mental health care (National Disability Authority, 2016; UN, 2006). Evidence-based practices are the gold standard in human service provision (National Institute for Health and Care Excellence [NICE], 2015; Walker & Bukhari, 2018), with outcomes such as increased quality of life, meaningful skill development and increased opportunities for social inclusion widely cited in the literature (Amado et al., 2013; Beadle-Brown et al., 2016; Christopher & Horsley, 2016; Mansell et al., 2002). These approaches are also associated with organisational benefits, such as clinical and cost effectiveness, greater job satisfaction and reduced turnover of staff (Hassiotis et al., 2014; McClean et al., 2007; Qian et al., 2019). Systemic or setting wide PBS is emerging in the literature as a promising and sustainable means of developing person-centred, rights-based cultures of support using evidence-based practices in adult disability settings (McGill et al., 2018; McKenzie, McNall, et al., 2021; McNall et al., 2016; Noone et al., 2021). Encouraging outcomes for adults with ID in terms of increased quality of life, adaptive skills and reduced distressed behaviours have been demonstrated (Freeman et al., 2005; McGill et al., 2018; Perry et al., 2013). The validation of setting-wide PBS with this population group is in its infancy, and there is a need to further substantiate this model with empirically and theoretically robust research. This introduction will explore systemic change in organisational settings in the context of the setting-wide PBS model, with a focus on workforce development programmes. Relevant empirical approaches to this investigation will be critically discussed, followed by the future implications of the research such as implementation of the systemic PBS framework at scale.

Implementing an innovation in an organisation requires change at multiple levels. One frequently cited theory of planned change is the Action Research Model, initially presented by Kurt Lewin in the mid 1940’s (Schmuck, 2006) which is described in
Figure 4.1.
This model has been successfully applied across a broad range of contexts, from child welfare (Harris & Hackett, 2008) to occupational stress (Israel et al., 2020) to disability service provision (Vallenga et al., 2008). Applying this evidence-based change model to the implementation of the setting-wide PBS approach upholds several of the principles of PBS, such as adopting a systems perspective, having a foundation in behavioural science, multiple theoretical perspectives and data driven decision making (Sugai & Horner, 2009). The first steps of the model, “identification of the problem” and “consultation with behavioural experts”, are described in several setting-wide PBS studies where researchers detail an initial consultation process with commissioners and senior management teams (Higgins, 2021; McGill et al., 2018). “Data gathering”, “preliminary diagnosis” and “data gathering after action” is demonstrated through the gathering of baseline and outcome data for people with ID, DSP, alongside organisational data such as staff turnover and overall use of restrictive practices (Freeman et al., 2005; Higgins, 2021; McGill et al., 2018; Riding, 2016). Together,
these data highlight areas for intervention and are used in data-based decision making to evaluate outcomes. “Feedback to key clients or groups”, “joint diagnosis of the problem” and “joint action planning” correspond to the PBS principles of stakeholder participation, ecological validity and social validity (Carr et al., 2002). Finally, in the context of setting- wide PBS, “action” is the multi-tiered model of support focused on systems change and multi-component intervention based on the results of the initial consultation process. The Action Research Change model in this regard shows good contextual fit with setting-wide PBS and has been applied to the investigation of the construct in educational settings (Beard et al., 2015). However, the procedures for implementing setting-wide PBS in adult settings needs further exploration.

As discussed in Chapter 2, there remains a paucity of extant literature examining the implementation of setting-wide PBS in adult disability settings. Within the available research, a recurrent limitation is the scientific strength of the published studies. Firstly, many of the studies do not employ empirical methods of analysis, applying case reporting or other less scientific approaches (Allen et al., 2012; Evans et al., 2020; Higgins, 2021). The randomised control trial (RCT) is considered the most thorough and vigorous research methodology of determining a causal relationship between an intervention and outcomes observed and is considered the gold standard in clinical practice (Bhide et al., 2018). There is some debate however of the appropriateness of this design for complex interventions, or for participants with complex support needs (Ersek et al., 2012; Mulhall et al., 2018). Cluster RCTs, where groups of subjects, rather than individual participants, are randomised based on settings or geographical locations, have become progressively more prevalent in health service research as they are well fitted to tackling matters connected to health care organisation, practice, and policy (Eldridge & Kerry, 2012; Hemming et al., 2017). Several studies have adopted this methodology in PBS research (Hassiotis et al., 2018; Hassiotis et
al., 2014; Hunter et al., 2020; McGill et al., 2018). As reviews of published cluster trials have found that the quality and conduct of reporting have been weak, Campbell and colleagues (2004) have provided a quality checklist for reporting of cluster trials (see Table 4.1). It is important to note that there are identified complications with using this methodological design with vulnerable populations such as those with mental health issues or intellectual disabilities including: a) health related concerns; b) the complexity of informed consent in this demographic, and c) obtaining adequate sample sizes for sufficient statistical power (Oliver et al., 2002). It is imperative that these difficulties are considered in the practice of these designs with this population.
Intricate than for individual RCTs, diverse clusters (Hooper et al., 2018). Usually, baseline data is collected before participants from the same cluster are likely to be more comparable than those from diverse clusters (Hooper et al., 2018). Usually, baseline data is collected before randomisation to account for this factor. However, the analysis of these data is more intricate than for individual RCTs,

### Table 4.1

**CONSORT Checklist for Reporting Cluster Randomised Control Trials**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Item</th>
<th>Descriptor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title and Abstract</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design</td>
<td>1</td>
<td>Method of allocation of participants to intervention and control groups – specifying cluster allocations</td>
</tr>
<tr>
<td><strong>Introduction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Background</td>
<td>2</td>
<td>Empirical context and rationale for using a cluster design</td>
</tr>
<tr>
<td>Methods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participants</td>
<td>3</td>
<td>Inclusion criteria for participants and clusters and details of setting/locations where data were gathered</td>
</tr>
<tr>
<td>Interventions</td>
<td>4</td>
<td>Specific description of the intervention plan for each group, the application at an individual/cluster/combined level and a detailed timeline of implementation</td>
</tr>
<tr>
<td>Objectives</td>
<td>5</td>
<td>Precise aims and hypotheses, and whether they relate to the individual/cluster/combined level</td>
</tr>
<tr>
<td>Outcomes</td>
<td>6</td>
<td>Described defined primary and secondary measures and their pertinence at an individual/cluster/combined level — including any procedures used to enrich the methodological rigour of the study (e.g., training of assessors)</td>
</tr>
<tr>
<td>Sample Size</td>
<td>7</td>
<td>Detail of sample size calculations including method of calculation, number of clusters, cluster size, intracluster correlation coefficient (ICC) and if any interim analysis was employed</td>
</tr>
<tr>
<td><strong>Randomisation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sequence generation</td>
<td>8</td>
<td>Procedure used to create the random distribution structure of clusters, including any restriction details (e.g., matching)</td>
</tr>
<tr>
<td>Allocation concealment</td>
<td>9</td>
<td>Detail of whether and how the random allocation sequence was concealed until interventions were assigned</td>
</tr>
<tr>
<td>Implementation</td>
<td>10</td>
<td>Description of who a) generated the allocation sequence, b) recruited participants and c) assigned participants to intervention/control groups</td>
</tr>
<tr>
<td>Blinding (masking)</td>
<td>11</td>
<td>Details given of whether participants, implementers and researchers were blinded to group assignment, and evaluation of the quality of blinding procedure</td>
</tr>
<tr>
<td>Statistical methods</td>
<td>12</td>
<td>Stipulation of statistical methods employed to compare groups for primary outcome(s), demonstrating how clustering was accounted for</td>
</tr>
<tr>
<td><strong>Results</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participant flow</td>
<td>13</td>
<td>Movement of clusters and participants through each stage – (CONSORT diagram recommended for this) with rationale provided for any deviations from plan</td>
</tr>
<tr>
<td>Recruitment</td>
<td>14</td>
<td>Dates outlining the phases of recruitment and follow up</td>
</tr>
<tr>
<td>Baseline data</td>
<td>15</td>
<td>Baseline information for each group (individual participants and cluster levels where relevant)</td>
</tr>
<tr>
<td>Numbers analysed</td>
<td>16</td>
<td>Sum of clusters and participants (denominator) in each group integrated in analysis and whether the investigation was by intention to treat. Describe results in absolute numbers where possible.</td>
</tr>
<tr>
<td>Outcomes and estimation</td>
<td>17</td>
<td>Summary of primary and secondary outcomes for each group (individual/cluster level where feasible) including estimated effect size, confidence intervals and intracluster correlation for each result.</td>
</tr>
<tr>
<td>Ancillary analyses</td>
<td>18</td>
<td>Address multiplicity by reporting all analyses performed (including subgroup and adjusted analyses) with details of whether they were prerearranged or investigative.</td>
</tr>
<tr>
<td>Adverse effects</td>
<td>19</td>
<td>Describe significant adverse/side effects in each intervention group</td>
</tr>
<tr>
<td>Discussion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpretation</td>
<td>20</td>
<td>Interpretation of the results incorporating research aims and hypotheses and limitations such as bias, inaccuracy and problems with diversity of analysis</td>
</tr>
<tr>
<td>Generalisability</td>
<td>21</td>
<td>External validity of findings to both individuals and clusters</td>
</tr>
<tr>
<td>Overall evidence</td>
<td>22</td>
<td>Overall interpretation of outcomes in the context of extant evidence</td>
</tr>
</tbody>
</table>

When analysing cluster data, it is important to take into consideration that participants from the same cluster are likely to be more comparable than those from diverse clusters (Hooper et al., 2018). Usually, baseline data is collected before randomisation to account for this factor. However, the analysis of these data is more intricate than for individual RCTs,
and there are several available methodologies that adjust for baseline assessments, such as patient level and cluster level analyses (Campbell, 2000). Constrained baseline analysis for example, considers baseline and follow-up data as longitudinal and assumes that groups are comparable at baseline. It allows for the use of all available data at the individual level, which is significant given the high resource investment required to carry out a RCT (Hooper et al., 2018; White & Thompson, 2005). The selection of an appropriate and robust investigative strategy is considered essential to avoid presenting inaccurate results and ambiguous conclusions (Campbell, 2000).

The values and principles of setting-wide PBS determine that enhanced quality of life, reduced distressed behaviours, increased social validity, greater treatment fidelity, altered perceptions of distressed behaviour and improved stakeholder capacity are important expected outcomes (Carr & Horner, 2007; Freeman et al., 2005; McGill et al., 2018; Perry et al., 2013; Sprague et al., 2020; Sugai & Horner, 2009). To maintain the empirical rigour of the cluster RCT design, reliable and validated tools are required to measure these potential outcomes. Quality of life is a notoriously complex outcome to measure, especially with vulnerable population groups (Buntinx & Schalock, 2010; Claes et al., 2009; Schalock et al., 2018). Tools that include both self-report and proxy-based or observational measures are important to allow for corroboration of findings, especially in the instance of those with more significant and complex support needs (Verdugo et al., 2014). While many organisations collect generic data on the use of restrictive practices and incidents of challenging behaviour, these tools are often considered of poor methodological value. There are numerous standardised assessment tools for the measurement of distressed or challenging behaviour, which are more fitting for empirical research (Aman, 2013; Harris et al., 2010; Rojahn et al., 2001). Most systematic measures of social validity consist of rating scales and questionnaires, and there are several well validated measures available (Carter, 2007; Carter & Wheeler, 2007).
Furthermore, the Periodic Service Review (LaVigna et al., 1994) has been evidenced as an effective tool in measuring implementation fidelity in several investigations of PBS (Baker & Shephard, 2010; Lowe et al., 2010; McGill et al., 2018). Finally, the use of pre and post-tests of knowledge are widespread in the evaluation of learning outcomes for training programmes as described in Chapter 2.

Careful thought must also be given to the handling of these instruments. The National Disability Authority in Ireland published a guidance document in 2019 specifically discussing the matter of appropriate outcome measurement in evaluating quality of service provision for people with disabilities (National Disability Authority [NDA], 2019). This document highlights several challenges in measurement, including the complex and multi-faceted nature of meaningful results, the difficulty in operationally defining abstract and complex constructs such as “engagement”, and the cognitive and communicative limitations experienced by adults with complex impairments. Researchers and study teams are obligated to maintain the appropriate competencies required for meaningful and ethical measurement of outcomes with this vulnerable population group.

It is essential to adopt investigative designs of adequate strength and rigour to thoroughly investigate the effect of systemic and sustainable models of support on the lives of vulnerable adults and those who support them. The aim of the present study, therefore, was to examine the impact of tier 1 setting-wide PBS on direct outcomes related to adults with ID, and DSP, in a community-based residential setting in Ireland, using a cluster-based RCT design. Outcomes are reported by examining distressed behaviour and quality of life of adults with ID; and perceptions, knowledge, treatment acceptability and implementation fidelity of DSP.

Method

Setting and Participants
The study was conducted in an adult disability service in the southeast of Ireland during 2020 to 2021. This organisation provides a range of health and social care services to adults with moderate to severe intellectual disabilities across 23 supported living settings and one day service setting. Multi-disciplinary professional supports were available through the HSE adult disability team (occupational therapy, speech and language therapy, nutrition and dietetics, psychology, and psychiatry services) and the host organisations in-house clinical team (social work, behaviour support specialist, nursing support etc). Supported living settings usually consisted of three-to-four-bedroom houses with an average of three supported adults living in each setting. The service completed this research as part of a funded employment based postgraduate award in partnership with Trinity College Dublin and the Irish Research Council. At the commencement of the study the setting was in the final stages of decongregation which was then completed in December 2020. Ethical approval by the human rights committee in the host institution was granted in July 2019 and subsequently by an ethical research board at TCD in January 2020. The investigation involved three participant groups. Adults with intellectual disabilities that resided in a community-based support living setting provided by the host organisation were invited to participate. Exclusion criteria were that no significant changes (such as moving home) were planned at the time of recruitment. Staff working in community-based supported living settings were also invited to participate in the investigation. Exclusion criteria were that no significant changes (such as decongregation of the work setting or change of work placement) were planned at the time of recruitment. Finally, following randomised allocation of intervention clusters, practice leaders were nominated to attend the tier 1 setting-wide PBS training programme. Inclusion criteria were that these personnel worked in, or with in the case of senior managers, allocated intervention clusters and exclusion criteria were the same as the main staff cohort.
Intervention: Tier 1 Setting-Wide PBS Workforce Development Programme
Experimenters, using the core principles of setting-wide PBS, approached the improvement of practice quality within the test settings using the intervention process described in Figure 4.2. A setting-wide PBS working group was established to administer the intervention in the host organisation. This team initially consisted of the chief executive officer, director of services, culture and practice development manager, community services manager and the lead researcher. The working group was scheduled to meet every 6 – 8 weeks to administer the intervention. The next stage of the study involved a complex consent process as many of the adults with ID required individualised support with assisted decision making.
Figure 4.2
*Overview of Setting-wide PBS Implementation Plan and Timeline*

Identified practice leaders were enrolled on the tier 1 setting-wide PBS workforce development module on Microsoft Teams, where a schedule of virtual training sessions, programme resources and materials, and knowledge tests were available. Participants also had access to intergroup communication, resource sharing and reflective practice journaling through the platform. Practice leaders attended two online introductory workshops delivered consecutively over two days in July 2020, focused on the model of setting wide positive behaviour support and associated skills. Online workshops were also recorded and accessible to participants who were unable to attend the live sessions due to unforeseen circumstances. Details of the development and content of the workshops are provided in Chapter 3.

Practice leaders were directed to complete an audit of practice within their individual
work settings across key practice areas associated with tier 1 setting-wide PBS (Leitch, Jones, & MacDonald, 2020). The non-standardised audit tool used by participants is provided in Chapter 3 (see Table 3.5). The lead researcher met remotely with the practice leaders on several occasions between July and Sept 2020 and worked collaboratively to convert identified practice development areas into a programme of outcome standards. The Periodic Service Review (PSR) (LaVigna et al., 1994) was adopted to measure implementation of these outcome standards at baseline and on completion of the setting-wide PBS training programme. Examples of set standards are shown in Table 4.2. Over the subsequent eight-month period, the research team worked collaboratively with practice leaders in intervention settings to engage in the workforce development programme tailored to practice development themes identified in each location. The components of this programme are summarised in Table 4.3 and described below.
### Table 4.2

*Examples of Tier 1 Setting-Wide PBS Practice Development Goals in Test Settings*

<table>
<thead>
<tr>
<th>SWPBS Practice Area</th>
<th>Practice Development Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meaningful Activities and</td>
<td>Individualised programme of active supports for all persons supported in the setting&lt;br&gt;Clear documentation to support effective implementation and evaluation of active support programmes</td>
</tr>
<tr>
<td>Skills</td>
<td></td>
</tr>
<tr>
<td>Capable Environments</td>
<td>Identify support needs for individuals in preparation for future transition to permanent home with reference to adaptations regarding sensory impairments&lt;br&gt;Create additional living space in setting to support privacy and accessible low arousal space&lt;br&gt;Height adjustable dining table to promote inclusive mealtimes and gatherings in dining area</td>
</tr>
<tr>
<td>Relationships</td>
<td>Assist people supported to host family members for a meal in their home due to COVID-19&lt;br&gt;Use of social stories to support and develop understanding of privacy&lt;br&gt;Individual social skill programme for people supported based on person centred plan goals&lt;br&gt;Teach functional use of talking tiles for person supported</td>
</tr>
<tr>
<td>Health and Wellbeing</td>
<td>Use of visual communication aids (visual calendar and planners)&lt;br&gt;Continence management support programme&lt;br&gt;Information and support for healthy nutrition (healthy food choices, active lifestyle, variety in meals etc.).&lt;br&gt;Support for visit to dental hygienist&lt;br&gt;Support for assisted decision making around specific health related conditions (individualised easy read materials)</td>
</tr>
<tr>
<td>Staff and Management</td>
<td>Consistent schedule of supervision (quality conversations) for DSP&lt;br&gt;Quick reference guides to organisational policies for DSP&lt;br&gt;Infographic of organisational structure (e.g., roles and responsibilities) for DSP</td>
</tr>
<tr>
<td>Organisational Factors</td>
<td>Quick reference guide to practice requirements for HIQA standards and regulations (including documentation requirements)&lt;br&gt;Quick reference guides for using organisation-specific IT systems (e.g., incident reporting system) for DSP</td>
</tr>
</tbody>
</table>
Table 4.3

*Treatment Components of the Tier 1 Setting-Wide PBS Workforce Development Programme*

<table>
<thead>
<tr>
<th>Description</th>
<th>Time Frame</th>
<th>People Involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundation SWPBS Training</td>
<td>1 online session per month for 8 months</td>
<td>Lead researcher</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Practice Leaders SMT (to support attendance)</td>
</tr>
<tr>
<td>Practice Leader Coaching Sessions</td>
<td>Online – as required (offered monthly)</td>
<td>Lead researcher</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Practice leaders DSP</td>
</tr>
<tr>
<td>Progress Review Meetings</td>
<td>Every 6-8 weeks</td>
<td>PBS Steering Group</td>
</tr>
<tr>
<td>Employment of existing resources</td>
<td>As required</td>
<td>Lead researcher</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Practice Leaders SMT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MDT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DSP</td>
</tr>
<tr>
<td>Employment of external resources</td>
<td>As required</td>
<td>Lead researcher</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Practice Leaders SMT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MDT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DSP</td>
</tr>
<tr>
<td>Fading of intervention</td>
<td>Penultimate and final month of training programme</td>
<td>Lead researcher</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Practice leaders SMT/DSP</td>
</tr>
</tbody>
</table>

*Note:* Abbreviations used in this table are as follows: Senior Management Team (SMT); Direct Support Personnel (DSP); Multidisciplinary Team (MDT)

a) A 9-module programme focused on tier 1 setting-wide PBS was delivered online via Microsoft Teams. The manual for this programme is described in Chapter 3. Each session focused on a specific practice area and was delivered monthly. Training content was mainly developed before randomisation of groups but were updated to reflect specific practice development goals of the intervention clusters following randomisation. Following each focused training session, practice leaders were instructed to implement that specific area of practice development in their respective work settings.

b) Coaching support sessions were scheduled with practice leaders by the lead experimenter to support implementation of practice improvement plans. These coaching sessions were facilitated online using Microsoft Teams. Practice leaders were
contacted regularly by the research team and reminded that these sessions were available to them.
c) The lead researcher met regularly with the director and assistant director of services to discuss treatment fidelity of practice improvement plans, engagement with the intervention and tackle any implementation concerns.

d) Practice leaders were encouraged to access all available resources within the organisation which included a behaviour support service, social work service, training department, quality department, health and safety department and line management structure where required.

e) Practice leaders were urged to seek appropriate supports through HSE disability teams of allied health professionals (occupational therapists, speech and language therapists, physiotherapists, psychologists etc) and other relevant community-based supports such as local council accessibility departments.

f) Towards the conclusion of the intervention, the researcher faded input and sought to transfer remaining practice goals to the setting team or management team.

Throughout the intervention period, treatment as usual (TAU) settings received no additional input from the research team. They continued to access available supports from the organisation as before (internal and external).

**Outcome measures – Time 1 (Baseline Testing)**

Initially, all settings were visited by the lead researcher to introduce the study and the planned measurement tools. Subsequently, Covid-19 restrictions determined that in-person data research activity was prohibited. As a result, all baseline data were collected remotely using the online survey platform Qualtrics (http://www.qualtrics.com). A survey link was emailed to all participants with instructions for completion and contact information for support. All settings were contacted by phone by the lead experimenter to offer support with Qualtrics and survey instructions. A summary of measures used is
shown in Table 4.4.
Participants with ID were either supported by DSP who knew them well to complete the survey, or familiar DSP completed the survey on their behalf.
Table 4.4

*Outcome Measures and Dependent Variables According to Participant Type*

<table>
<thead>
<tr>
<th>Participant Type</th>
<th>Measures</th>
<th>Time Points</th>
<th>Reliability and Validity of Measure</th>
<th>Format of measure</th>
<th>Outcome measured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults with ID</td>
<td>Demographic Questionnaire</td>
<td>T1</td>
<td>-</td>
<td>Online open-ended questionnaire</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Aberrant Behaviour Checklist (ABC)</td>
<td>T1</td>
<td>high reliability and validity (M. Aman et al., 1995; Beadle-Brown et al., 2012; Hassiotis et al., 2009).</td>
<td>Online assessment – four point rating scale for each statement</td>
<td>Behaviour of concern</td>
</tr>
<tr>
<td></td>
<td>San Martin Scale (SMS) (Verdugo et al., 2014)</td>
<td>T1</td>
<td>Strong reliability and validity have been demonstrated for the measure (Stone et al., 2020; Verdugo et al., 2014).</td>
<td>Online assessment – four point rating scale for each statement</td>
<td>Quality of life</td>
</tr>
<tr>
<td>DSP Participants</td>
<td>Treatment Acceptability Rating Form – Revised (TARF-R) (Reimers, Wacker, Derby, &amp; Cooper, 1995) – see Table</td>
<td>T1</td>
<td>This measure is widely cited in the literature examining the social validity of interventions (Carnett et al., 2021; Gregori et al., 2020; Knowles, Massar, Raulston, &amp; Machalicek, 2017).</td>
<td>Online assessment form – seven point likert scale (Table)</td>
<td>Social validity of intervention</td>
</tr>
<tr>
<td></td>
<td>The Challenging Behaviours Attribution Scale (CHABA) (Hastings, 1997)</td>
<td>T1</td>
<td>Strong reliability and validity has previously been reported for this measure (MacDonald et al., 2018)</td>
<td>Online assessment – 5 point likert scale for each statement</td>
<td>Staff attitudes about why people engage in challenging behaviour</td>
</tr>
<tr>
<td>Practice Leaders</td>
<td>PBS Knowledge Tests</td>
<td>All</td>
<td>-</td>
<td>Online multiple choice questionnaires (one per session)</td>
<td>Staff knowledge of PBS concepts</td>
</tr>
<tr>
<td>Periodic Service Review</td>
<td>T1</td>
<td>-</td>
<td>Checklist compiled and scored with practice leaders at baseline and upon completion of training</td>
<td>Implementation of the Tier 1 PBS plan</td>
<td></td>
</tr>
</tbody>
</table>
A short four item questionnaire related to demographics for supported persons with intellectual disabilities focused on date of birth, gender, supported living setting and current diagnosis. The two-item demographic questionnaire for staff concentrated on job title and current work setting.

**Adults with ID**

The Aberrant Behaviour Checklist (ABC) (Aman, 2013) is an empirically developed scale designed to measure psychiatric symptoms and behavioural disturbance displayed by individuals with ID across five domains: irritability; agitation and crying; lethargy/social withdrawal; stereotypic behaviour; hyperactivity/non-compliance; and inappropriate speech. The ABC has been widely used in adult disability research due to its high reliability and validity (Beadle-Brown et al., 2012; Hassiotis et al., 2009; Rittmannsberger et al., 2020) and has been employed effectively in previous cluster-based research (Hassiotis et al., 2018; McGill et al., 2018; Willner et al., 2013). The measure consists of a series of statements that are rated based on a 4-point Likert scale. Ranges for subscale scores are summarised in Table 4.5. A total ABC score is calculated by the sum of the subscale scores. A higher score indicates a greater level of aberrant or distressed behaviour in that area.
Table 4.5

*Score Ranges on the ABC Measure*

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Minimum score</th>
<th>Maximum score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irritability</td>
<td>0</td>
<td>45</td>
</tr>
<tr>
<td>Lethargy</td>
<td>0</td>
<td>48</td>
</tr>
<tr>
<td>Stereotypy</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>Hyperactivity</td>
<td>0</td>
<td>48</td>
</tr>
<tr>
<td>Inappropriate speech</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Overall aberrant behaviour</td>
<td>0</td>
<td>174</td>
</tr>
</tbody>
</table>

The San Martin Scale (SMS) is a 95-item questionnaire developed to measure quality of life in people with intellectual and multiple or complex disabilities (Verdugo et al., 2014). Items are divided into eight categories: self-determination, emotional wellbeing, physical wellbeing, material wellbeing, rights, personal development, social inclusion, and interpersonal relationships. Each item is scored on a four-point Likert scale with scores ranging from 1 to 20 for subscales, and 52 to 132 for an overall QOL index. Higher scores indicate a greater quality of life. The measure is reported to be a reliable and valid instrument for individuals with complex diagnoses (e.g., intellectual disability and autism) and moderate to profound support needs (Stone et al., 2020).

*Staff Participants*

The Treatment Acceptability Rating Form (TARF) was devised from the original measure of treatment acceptability developed by Kazdin (1980), who describe treatment acceptability as the degree to which stakeholders find an intervention to be fair, reasonable, appropriate, and coherent with expectancies of intervention. A revised version of the instrument, the TARF-R, was subsequently developed to provide an acceptable tool that was suitable for clinical populations (Carter & Wheeler, 2019). Items on the form were modified so the questions referred to positive behaviour support implementation in a residential service setting, as shown in Table 4.6, and participants rated each item using a Likert scale from 1 (not at all) to 7 (very acceptable). Higher
scores indicate a greater level of treatment acceptability or social validity.
Table 4.6

Adapted TARF-R for PBS Interventions

1. How acceptable do you find the positive behaviour support (PBS) service?
2. How likely is PBS to improve behaviour?
3. How costly would PBS be?
4. How willing would you be to follow PBS recommendations?
5. How much time would be needed to follow PBS recommendations?
6. How confident are you that PBS recommendations will be effective?
7. How willing would you be to change your working routines to follow PBS recommendations?
8. How disruptive would it be to your staff team/colleagues to carry out PBS recommendations?
9. How effective would PBS recommendations be for the person supported?
10. How well would the PBS recommendations fit into the routines of the work setting (e.g., day service, residential setting)

Note: All questions are scored on a 7-point Likert scale with a score of 1 representing “not at all” and 7 representing “very acceptable”

The Challenging Behaviours Attribution Scale (CHABA) is a 33-item survey designed to measure causal explanations for challenging behaviour reflecting the range of models found in the literature – learned behaviour; biomedical; emotional; stimulation and physical environment (Hastings, 1997). Responses are recorded using a Likert scale from 1 (very unlikely) to 5 (very likely). Five main subscale scores are calculated from these ratings. Each rating is assigned a value of (-2) very unlikely, (-1) unlikely, (0) Equally likely/unlikely, (1) likely; or (2) very likely. Below zero scores indicate the factor is unlikely to account for the person’s challenging behaviour, whereas above zero scores indicate the subscale is a reasonable explanation for the challenging behaviour. Moderate to good level of reliability for all sub-scales has been demonstrated (Hastings, 1997).

Knowledge tests were developed by the lead experimenter using the content from the Tier 1 setting-wide PBS workforce development programme reported in Chapter 3. The purpose of these assessments was to evaluate the knowledge gained by each practice leader following their engagement in each session of the training programme. This approach is based on level 2 of the Kirkpatrick Model, a worldwide established method.
of evaluating the
results of training and learning programmes (Kirkpatrick & Kirkpatrick, 2016). An edumetric analysis was conducted of the nine knowledge assessments (Carver, 1974). Edumetric validity of a measure refers to its sensitivity to alterations which are due to change or growth of a specific trait and are intended to generate scores that are consequential without reference to the achievements of others (Hoz et al., 1997). Validity can be demonstrated by the administration of a measure to the same group of subjects at different times when progress has happened or is projected (Hoz et al., 1997). Knowledge scores ranged from 0 to a maximum of 16 with higher scores on post-training tests indicating a great retention of the knowledge content of the training module.

Intervention implementation was measured using the Periodic Service Review (PSR) (LaVigna et al., 1994). The PSR is quality improvement tool which provides a means of monitoring set standards. Practice leaders were supported to agree several setting specific standards based on the outcomes of the tier 1 setting-wide PBS audit tool as presented in Table 3.5. These standards were then summarised in a checklist to evaluate implementation over time. Achieved goals are calculated as a percentage of total goals set, with higher percentages indicating greater rates of implementation.

**Outcome Measures – Time 2 (Post-Intervention)**

All post-intervention data were collected remotely using the online survey platform Qualtrics (http://www.qualtrics.com). An email with a link to the survey was sent out to all participants with instructions for how to complete the online survey and contact information for support. All settings were contacted by phone by the lead experimenter to offer support with Qualtrics and survey completion.

Participants in the TAU settings completed T1 and T2 outcome measures which were communicated via email link. There was no other input from the research team throughout the duration of the intervention. Participants in these settings continued to have access to all
supports available through the host organisation and HSE. These supports included social work, psychology, physiotherapy, speech and language therapy, occupational therapy, dietetics/nutrition and referral based or tier 3 behavioural support.

Research Design

The study was carried out using a pragmatic cluster randomised controlled trial (Eldridge & Kerry, 2012; Hotopf, 2002). The design was specifically developed for health care research conducted in ‘real-world settings’ with a view to striking a balance between the need for control of variance and generalisability of results (Thorpe & Ritchey, 2021). As this intervention was designed for implementation in community-based residential settings, it was not possible to include participants from the same setting in both the intervention and treatment as usual (TAU) groups, as they were living in the same environment. Therefore, participants were grouped in clusters, with each cluster comprising of a discrete residential setting.

Sample Size

A sample size of 50 adults with ID (n=25 per group) is sufficient to detect an effect size of 0.8 in an independent samples t-test, with a power of 80% level of significance of 0.05 and a 2-tailed test. To account for the study being a cluster randomised study, the required sample size was inflated to 60 adults with ID (n=30 per group). This was based on a design effect of 1.2 (assuming a fixed number of clusters per group of 11 and ICC=0.10). A sample size calculator for clustered data provided by the University of California San Francisco (UCSF) (Kohn & Senyak, 2018) was used to determine this. The ICC and effect size was based on findings in similar studies (Hassiotis et al., 2009; McGill et al., 2018).

Randomisation

The setting-wide PBS steering group identified 23 clusters and each cluster was assigned an arbitrary number. One of these clusters was the central administration setting
where senior management team members were based. An allocation concealment method was adopted for this study (Day & Altman, 2000). The experimenters and participants were blind to allocation at baseline, or time point 1. For all subsequent data points however, participants and researchers were aware of group allocations. Randomisation was carried out using a researcher randomizer (https://randomizer.org) tool. The randomiser was used by the lead experimenter to generate two sets consisting of the identified numbers. Sets were categorised into intervention and TAU groups using a coin toss method performed by the lead experimenter. Some 78 staff participants were assigned to intervention settings and 67 staff were assigned to TAU settings. Likewise, 38 participants with ID were assigned to intervention settings, and 34 participants with ID were assigned to TAU settings, which achieved the required sample size. Following randomisation of groups, the setting-wide PBS working group members liaised with staff teams in the intervention settings to recruit participants (where possible one team leader/person in charge and a second direct support staff member) to attend tier 1 setting-wide PBS training. An interest in training in PBS was preferable but not a requirement. Members of the senior management and operations team were also invited to attend this training. A group of 23 staff, designated “practice leaders” (PLs) were identified to participate in the training programme. A participant flow diagram is provided to summarise the movement of clusters and individual participants through each phase of the investigation (see Figure 4.3).
Figure 4.3

CONSORT Flow Diagram

**Enrollment**

Clusters assessed for eligibility (n=25)

Excluded (n = 2)
Not meeting inclusion criteria

Randomised (n=23 settings)

**Intervention Group**

n=12 clusters
n=38 participants with ID
n=78 staff (including 23 PL)

**Time 1**

**Time 2**

Attrition
n=1 Participant with ID
(deceased)
n= 23 staff (did not complete post-intervention survey)

**Treatment as usual Group**

n=11 settings
n =34 participants with ID
n = 67 staff

Attrition
n=2 participants with ID
(deceased)
n= 26 staff (did not complete post-intervention survey)

**Analysis**

n=12 clusters
n=37 participants with ID
n=55 staff (including 16 PL)

n=11 clusters
n=32 participants with ID
n=41 staff
Data Analysis – Adults with ID and DSP

Linear mixed models with a constrained baseline analysis were used to investigate the effect of the intervention for adults with ID and DSP. This approach assumes that the means in each group (experimental, control) are the same at baseline and this is the approach recommended in cluster randomised trials with a baseline assessment of outcome (Hooper et al., 2018). The mixed model included intercept, time (pre, post) and the interaction of time by group (experimental, control) as fixed effects and intercept, cluster, individual nested within cluster and time nested within cluster as random effects (Hooper et al., 2018). An intention to treat approach was adopted for this study. All tests were two-sided and a p-value<0.05 was statistically significant. All statistical analysis was performed using Stata (version 17, StataCorp LP, College Station, TX, USA).

Data Analysis – Practice Leaders

Linear mixed models were used to investigate the effect of the intervention by comparing practice leadership and knowledge scores pre- and post-intervention. The mixed model included intercept and time (pre, post) as fixed effects and intercept, cluster, individual nested within cluster and time nested within cluster as random effects. All tests were two- sided and a p-value<0.05 was considered to be statistically significant. All statistical analysis was performed using Stata (version 17, StataCorp LP, College Station, TX, USA).

Implementation fidelity data is described graphically.

Results

Participant Characteristics

Data were available for 72 adult participants with intellectual disabilities (ID).

Characteristics of the adults with ID are summarised in Table 4.7.
Table 4.7

Participants with ID Characteristics (n=72)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Intervention n (%)</th>
<th>Treatment as Usual n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>19 (50)</td>
<td>21 (62)</td>
</tr>
<tr>
<td>Female</td>
<td>19 (50)</td>
<td>13 (38)</td>
</tr>
<tr>
<td>Diagnosis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate/Severe ID</td>
<td>13 (34)</td>
<td>10 (29)</td>
</tr>
<tr>
<td>Severe/Profound ID</td>
<td>22 (58)</td>
<td>21 (62)</td>
</tr>
<tr>
<td>ID &amp; Autism</td>
<td>3 (8)</td>
<td>2 (6)</td>
</tr>
<tr>
<td>ID &amp; Mental Health</td>
<td>0 (0)</td>
<td>1 (3)</td>
</tr>
</tbody>
</table>

Participant characteristics for DSP are summarised according to individual measures used, as not all staff participants completed all sections of the questionnaire provided. Some 116 DSP completed the Treatment Acceptability measure (TARF) as detailed in Table 4.8, and 129 of the DSP team successfully completed the attitudes measure (CHABA) as described in Table 4.9. Finally, characteristics of the 23 DSP identified as practice leaders to attend tier 1 setting-wide PBS training in intervention settings are summarised in Table 4.10.
Table 4.8

Staff Participant Characteristics for TARF (n=116)

<table>
<thead>
<tr>
<th>Role</th>
<th>Intervention n (%)</th>
<th>Treatment as Usual n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Care Worker (SCW)</td>
<td>5 (8)</td>
<td>4 (7)</td>
</tr>
<tr>
<td>Healthcare Assistant (HCA)</td>
<td>40 (68)</td>
<td>45 (79)</td>
</tr>
<tr>
<td>Person In Charge (PIC)</td>
<td>4 (7)</td>
<td>2 (3.5)</td>
</tr>
<tr>
<td>ID Nurse (RNID)</td>
<td>7 (12)</td>
<td>4 (7)</td>
</tr>
<tr>
<td>Senior Management (SMT)</td>
<td>3 (5)</td>
<td>2 (3.5)</td>
</tr>
</tbody>
</table>

Table 4.9

Staff Participant Characteristics for CHABA (n=129)

<table>
<thead>
<tr>
<th>Role</th>
<th>Intervention n (%)</th>
<th>Treatment as Usual n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Care Worker (SCW)</td>
<td>6 (9)</td>
<td>4 (7)</td>
</tr>
<tr>
<td>Healthcare Assistant (HCA)</td>
<td>45 (64)</td>
<td>43 (73)</td>
</tr>
<tr>
<td>Person In Charge (PIC)</td>
<td>7 (10)</td>
<td>2 (3)</td>
</tr>
<tr>
<td>ID Nurse (RNID)</td>
<td>9 (13)</td>
<td>7 (12)</td>
</tr>
<tr>
<td>Senior Management (SMT)</td>
<td>3 (4)</td>
<td>3 (5)</td>
</tr>
</tbody>
</table>

Table 4.10

Practice Leader Characteristics (n=23)

<table>
<thead>
<tr>
<th>Role</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIC</td>
<td>8 (35)</td>
</tr>
<tr>
<td>HCA</td>
<td>6 (26)</td>
</tr>
<tr>
<td>SCW</td>
<td>4 (17)</td>
</tr>
<tr>
<td>SMT</td>
<td>4 (17)</td>
</tr>
<tr>
<td>RNID</td>
<td>1 (4)</td>
</tr>
</tbody>
</table>

Abbreviations: Person-in-Charge (PIC), Health Care Assistant (HCA), Social Care Worker (SCW), Senior Management Team (SMT), Registered Nurse in Intellectual Disability (RNID)

Participant Attrition

The total number of DSP that completed the post-intervention survey reduced by 49 which is a 38% overall attrition rate. Seven of this group were part of the practice leader cohort which can be calculated as a 30% attrition rate for this sub-group. In respect to practice leaders, two participants went on maternity leave, one unexpectedly moved work setting to a TAU cluster following session 1 of the training programme, one withdrew their consent following session 1 citing workload concerns as their rationale; two participants did not complete the training programme, and one left the service during
the intervention. Three adults with ID passed away during investigation which is calculated as 4% attrition for this cohort.

**Outcomes**

*Quality of Life of Adults with ID*

Participant QOL was measured using the San Martin Scale (SMS) (Verdugo et al., 2014). Results are calculated across eight distinct subscales, and an overall QOL index score can also be calculated. Baseline mean for overall quality of life was 116.4 (95% CI 112.9 to 119.9). Post-intervention mean was 115.7 in the TAU group, and 116.6 in the intervention group (mean change (95% CI): 1.0 (-5.2 to 7.2), p=0.759). Results of the analysis are presented in Table 4.11.
### Table 4.11

**Quality of Life Results for Adults with ID**

<table>
<thead>
<tr>
<th></th>
<th>Pre mean (95% CI)</th>
<th>Post mean (95% CI)</th>
<th>Post mean (95% CI)</th>
<th>mean difference (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMS - Overall - Quality of life (possible range: 52-132)</td>
<td>116.4 (112.9 to 119.9)</td>
<td>115.7 (110.9 to 120.5)</td>
<td>116.6 (112.0 to 121.3)</td>
<td>1.0 (-5.2 to 7.2)</td>
<td>0.759</td>
</tr>
<tr>
<td>SMS - Self Determination (possible range: 1-20)</td>
<td>14.1 (13.3 to 15.0)</td>
<td>14.3 (13.2 to 15.5)</td>
<td>14.1 (13.0 to 15.2)</td>
<td>-0.3 (-1.8 to 1.3)</td>
<td>0.742</td>
</tr>
<tr>
<td>SMS - Emotional Wellbeing (possible range: 1-20)</td>
<td>13.3 (12.7 to 13.9)</td>
<td>13.2 (12.3 to 14.1)</td>
<td>12.8 (12.0 to 13.6)</td>
<td>-0.4 (-1.5 to 0.8)</td>
<td>0.508</td>
</tr>
<tr>
<td>SMS - Physical Wellbeing (possible range: 1-20)</td>
<td>12.9 (12.4 to 13.4)</td>
<td>13.3 (12.5 to 14.1)</td>
<td>12.6 (11.8 to 13.4)</td>
<td>-0.7 (-1.8 to 0.4)</td>
<td>0.223</td>
</tr>
<tr>
<td>SMS - Material Wellbeing (possible range: 1-20)</td>
<td>12.0 (11.3 to 12.7)</td>
<td>11.7 (10.7 to 12.7)</td>
<td>11.5 (10.5 to 12.5)</td>
<td>-0.2 (-1.6 to 1.1)</td>
<td>0.727</td>
</tr>
<tr>
<td>SMS - Rights (possible range: 1-20)</td>
<td>13.5 (13.0 to 14.0)</td>
<td>13.2 (12.5 to 14.0)</td>
<td>13.4 (12.7 to 14.1)</td>
<td>0.1 (-0.8 to 1.1)</td>
<td>0.776</td>
</tr>
<tr>
<td>SMS - Personal Development (possible range: 1-20)</td>
<td>12.0 (11.1 to 12.9)</td>
<td>11.9 (10.7 to 13.2)</td>
<td>11.8 (10.6 to 13.0)</td>
<td>-0.1 (-1.9 to 1.6)</td>
<td>0.883</td>
</tr>
<tr>
<td>SMS - Social Inclusion (possible range: 1-20)</td>
<td>11.8 (10.9 to 12.7)</td>
<td>11.4 (10.2 to 12.7)</td>
<td>11.8 (10.6 to 13.0)</td>
<td>0.3 (-1.2 to 1.9)</td>
<td>0.670</td>
</tr>
<tr>
<td>SMS - Interpersonal Relationships (possible range: 1-20)</td>
<td>12.9 (12.2 to 13.7)</td>
<td>13.1 (12.0 to 14.1)</td>
<td>12.5 (11.4 to 13.5)</td>
<td>-0.6 (-2.0 to 0.8)</td>
<td>0.403</td>
</tr>
</tbody>
</table>
No statistically significant differences were found between the intervention and the TAU groups post-intervention for any of the SMS subscale outcomes (p>0.05 for group*time interaction described in Table 4.11). Marginal model results for SMS total scores are illustrated in Figure 4.4.

**Figure 4.4**

*Marginal Models Based on the Results from the Constrained Analysis for Total SMS Score*

Distressed behaviour of adults with ID

Distressed or aberrant behaviour was measured using the Aberrant Behaviour Checklist (ABC) (Aman, 2013). Results are calculated across five domains of symptoms, with an overall score calculated from the sum of the domains. Baseline mean for total ABC was 40 (95% CI 30.4 – 49.5). Post-intervention mean was 35.2 in the TAU clusters, and 24.7 in the intervention clusters (mean change (95% CI): -0.5(-17.4 to 16.5), p=0.957). Results of the analysis are presented in Table 4.12.
Table 4.12

Distressed Behaviour Results for Adults with ID

<table>
<thead>
<tr>
<th></th>
<th>Control (no intervention)</th>
<th>Experimental (no intervention)</th>
<th>Experimental-Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre mean (95% CI)</td>
<td>Post mean (95% CI)</td>
<td>Post mean (95% CI)</td>
</tr>
<tr>
<td>ABC Total (possible range: 0-174)</td>
<td>40.0 (30.4 to 49.5)</td>
<td>35.2 (22.0 to 48.3)</td>
<td>34.7 (22.1 to 47.3)</td>
</tr>
<tr>
<td>ABC - Irritability (possible range: 0-45)</td>
<td>12.6 (9.8 to 15.4)</td>
<td>9.7 (5.8 to 13.6)</td>
<td>9.5 (5.8 to 13.3)</td>
</tr>
<tr>
<td>ABC - Lethargy (possible range: 0-48)</td>
<td>10.2 (7.5 to 12.8)</td>
<td>9.3 (5.6 to 13.1)</td>
<td>10.0 (6.4 to 13.5)</td>
</tr>
<tr>
<td>ABC - Stereotypy (possible range: 0-21)</td>
<td>4.0 (2.7 to 5.3)</td>
<td>4.0 (2.2 to 5.8)</td>
<td>3.8 (2.1 to 5.5)</td>
</tr>
<tr>
<td>ABC - Hyperactivity (possible range: 0-48)</td>
<td>11.5 (8.2 to 14.8)</td>
<td>10.6 (6.2 to 14.9)</td>
<td>10.1 (5.9 to 14.4)</td>
</tr>
<tr>
<td>ABC - Inappropriate speech (possible range: 0-12)</td>
<td>1.5 (0.9 to 2.2)</td>
<td>1.3 (0.4 to 2.2)</td>
<td>1.4 (0.6 to 2.3)</td>
</tr>
</tbody>
</table>
No statistically significant differences were found between the intervention and TAU groups post-intervention for any of the ABC outcomes (p>0.05 for group*time interaction summarised in Table 4.12). Marginal model results for ABC total scores are illustrated in Figure 4.5.

**Figure 4.5**

*Marginal Models Based on the Results from the Constrained Analysis for ABC Total Scores*

![Graph showing marginal models for ABC total scores](image)

*higher score reflects greater distressed behaviour*

**Impact of Setting-Wide PBS on DSP – Treatment Acceptability**

Staff acceptability of the setting-wide PBS intervention was measured using an adapted version of the TARF-R (Carter & Wheeler, 2019). A higher score indicates a greater level of acceptance by staff of the intervention. Baseline mean for the measure was 52.4 (95% CI 50.5 - 54.3). Post-intervention mean was 55.5 for TAU clusters, and 55.6 for intervention clusters (mean change (95% CI): 0.3 (-4.1 to 4.8), p=0.879). Results of the analysis are presented in Table 4.13.
Table 4.13

*Treatment Acceptability and Attitudes to Challenging Behaviour Results for DSP*

<table>
<thead>
<tr>
<th></th>
<th>Pre</th>
<th>Post</th>
<th>Post</th>
<th>Experimental-Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mean (95% CI)</td>
<td>mean (95% CI)</td>
<td>mean (95% CI)</td>
<td>mean difference (95% CI)</td>
</tr>
<tr>
<td>TARF - Treatment Acceptability Rating Form (possible range: 10-70)</td>
<td>52.4 (50.5 to 54.3)</td>
<td>55.2 (51.8 to 58.7)</td>
<td>55.6 (52.7 to 58.4)</td>
<td>0.3 (-4.1 to 4.8)</td>
</tr>
<tr>
<td>Challenging Behaviour Attribution (CHABA)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHABA - Learned behaviour - learned negative (possible range: -9 to 9)</td>
<td>0.9 (0.4 to 1.3)</td>
<td>1.0 (0.3 to 1.8)</td>
<td>1.3 (0.7 to 2.0)</td>
<td>0.3 (-0.7 to 1.2)</td>
</tr>
<tr>
<td>CHABA - Biomedical (possible range: -18 to 18)</td>
<td>3.2 (2.5 to 3.9)</td>
<td>2.6 (1.3 to 3.8)</td>
<td>3.1 (2.0 to 4.2)</td>
<td>0.6 (-1.0 to 2.2)</td>
</tr>
<tr>
<td>CHABA - Physical environment (possible range: -24 to 24)</td>
<td>3.4 (2.4 to 4.4)</td>
<td>3.3 (1.5 to 5.2)</td>
<td>2.5 (0.9 to 4.1)</td>
<td>-0.8 (-3.3 to 1.6)</td>
</tr>
<tr>
<td>CHABA - Emotional (possible range: -21 to 21)</td>
<td>5.6 (4.9 to 6.3)</td>
<td>5.2 (3.8 to 6.6)</td>
<td>4.7 (3.5 to 5.9)</td>
<td>-0.5 (-2.3 to 1.4)</td>
</tr>
<tr>
<td>CHABA - Stimulation (possible range: -18 to 18)</td>
<td>1.3 (0.5 to 2.0)</td>
<td>1.1 (-0.3 to 2.5)</td>
<td>1.0 (-0.2 to 2.2)</td>
<td>-0.1 (-1.9 to 1.7)</td>
</tr>
<tr>
<td>CHABA - Learned behaviour - learned positive (possible range: - 9 to 9)</td>
<td>2.6 (2.2 to 3.0)</td>
<td>2.2 (1.4 to 2.9)</td>
<td>2.4 (1.8 to 3.0)</td>
<td>0.2 (-0.7 to 1.2)</td>
</tr>
</tbody>
</table>
No statistically significant differences were found between the intervention and treatment as usual groups post-intervention for treatment acceptability (p > 0.05 for group*time interaction presented in Table 4.13). Marginal model results for TARF scores are illustrated in Figure 4.6.

**Figure 4.6**
*Marginal Models Based on the Results from the Constrained Baseline Analysis for TARF-R*

![Graph showing the comparison of TARF scores before and after intervention between different groups.](image)

**Impact of Setting-Wide PBS on DSP – Perceptions**

Staff perceptions of distressed behaviours were measured using the CHABA (Hastings, 1997). Results are calculated across six subscales of causal attributes associated with challenging or distressed behaviour. The greatest mean baseline observed on the CHABA was in the emotional subscale ($\bar{x} = 5.6$, 95% CI 4.9 – 6.5). Post-intervention mean in this subscale in the TAU clusters was 5.2 (95% CI 3.8 to 6.6) and 4.7 (95% CI 3.5 – 5.9) in the intervention clusters (mean change (95% CI): -0.5 (-2.3 – 1.4), p=0.611. Results of the analysis are presented in Table 4.13.

No statistically significant differences were found between the intervention and treatment as usual groups post-intervention for staff perceptions of challenging behaviour.
(p>0.05 for group*time interaction presented in Table 4.13). Marginal model results for the CHABA emotion subscale are illustrated in Figure 4.7.

**Figure 4.7**
*Marginal Models for CHABA Emotional Domain*

![Image of Marginal Models for CHABA Emotional Domain](image)

**Impact of Setting-Wide PBS for Practice Leaders – Knowledge**

Practice leaders understanding and retention of the content of the tier 1 setting-wide PBS training was measured via nine distinct tests administered pre- and post-completion of training sessions. Each individual test was focused on the content of the associated training sessions. Higher scores indicated greater knowledge of the course content. Baseline mean for session 1 was 4.6 (95% CI 3.9 to 5.4) and increased to a post-intervention mean of 7.8 (95% CI 7.1 to 8.5). Mean change was 3.2 (95% CI 2.2 to 4.2), p<0.001. The results from the statistical analysis for each of the knowledge tests are presented in Table 4.14. There was a statistically significant increase in knowledge scores between pre- and post-intervention for all nine sessions. The smallest change was detected in Session 5 (“Relationships”) (mean change (95%CI): 2.0 (0.3 to 3.6), p<0.018) and is presented in Figure 4.8. The largest change was observed in Session 9 of the training (“Organisational Factors in
Setting-wide PBS")
where the baseline mean score was 5.8 (95% CI 4.3 – 7.4) which increased to 11.4 post-training (mean change (95% CI): 5.6 (3.8 to 7.4), p<0.001) and is presented in Figure 4.9.

**Figure 4.8**
*Marginal Plot for Session 5 Knowledge Test*

![Marginal Plot for Session 5 Knowledge Test](image)

* higher score indicates greater knowledge in PBS

**Figure 4.9**
*Marginal Plot for Session 9 Knowledge Test*

![Marginal Plot for Session 9 Knowledge Test](image)

* higher score indicates greater knowledge in PBS
### Table 4.14

**Knowledge Test Outcomes for Practice Leaders**

<table>
<thead>
<tr>
<th>Knowledge test</th>
<th>Pre mean (95% CI)</th>
<th>Post mean (95% CI)</th>
<th>Post-Pre mean change (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge test: Session 1 (possible range: 0 to 11)&lt;sup&gt;1&lt;/sup&gt;</td>
<td>4.6 (3.9 to 5.4)</td>
<td>7.8 (7.1 to 8.5)</td>
<td>3.2 (2.2 to 4.2)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Knowledge test: Session 2 (possible range: 0 to 12)&lt;sup&gt;1&lt;/sup&gt;</td>
<td>5.5 (4.2 to 6.7)</td>
<td>10.1 (8.9 to 11.2)</td>
<td>4.6 (3.1 to 6.1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Knowledge test: Session 3 (possible range: 0 to 12)&lt;sup&gt;1&lt;/sup&gt;</td>
<td>5.9 (4.9 to 7.0)</td>
<td>9.9 (8.8 to 10.9)</td>
<td>3.9 (2.5 to 5.4)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Knowledge test: Session 4 (possible range: 0 to 11)&lt;sup&gt;1&lt;/sup&gt;</td>
<td>6.0 (4.8 to 7.1)</td>
<td>8.6 (7.4 to 9.8)</td>
<td>2.6 (1.3 to 3.9)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Knowledge test: Session 5 (possible range: 0 to 12)&lt;sup&gt;1&lt;/sup&gt;</td>
<td>7.7 (6.5 to 8.8)</td>
<td>9.7 (8.5 to 10.8)</td>
<td>2.0 (0.3 to 3.6)</td>
<td>0.018</td>
</tr>
<tr>
<td>Knowledge test: Session 6 (possible range: 0 to 14)&lt;sup&gt;1&lt;/sup&gt;</td>
<td>3.9 (2.4 to 5.4)</td>
<td>8.5 (7.0 to 10.1)</td>
<td>4.6 (3.4 to 5.8)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Knowledge test: Session 7 (possible range: 0 to 13)&lt;sup&gt;1&lt;/sup&gt;</td>
<td>5.8 (4.4 to 7.3)</td>
<td>11.0 (9.6 to 12.4)</td>
<td>5.2 (3.3 to 7.0)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Knowledge test: Session 8 (possible range: 0 to 13)&lt;sup&gt;1&lt;/sup&gt;</td>
<td>7.0 (5.6 to 8.5)</td>
<td>11.6 (10.2 to 12.9)</td>
<td>4.5 (2.9 to 6.2)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Knowledge test: Session 9 (possible range: 0 to 16)&lt;sup&gt;1&lt;/sup&gt;</td>
<td>5.8 (4.3 to 7.4)</td>
<td>11.4 (9.9 to 12.9)</td>
<td>5.6 (3.8 to 7.4)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

<sup>1</sup>higher score indicates greater knowledge in PBS
Implementation Fidelity of Setting-Wide PBS Goals in Intervention Settings

Intervention implementation was measured by developing a checklist of setting-based standards using the setting-wide PBS audit tool and the PSR (LaVigna et al., 1994). Achieved goals are calculated as a percentage of total goals set, with higher percentages indicating greater rates of implementation. All settings had a baseline score of 0% as standards were clearly not achieved at initial assessment. Post-intervention data were only available for five of the intervention clusters and are presented in Figure 4.10. Setting 10 observed the greatest rate of implementation with 89% fidelity recorded. A summary of goals achieved per setting-wide PBS focus area is presented in Table 4.15.

Figure 4.10

Implementation Fidelity (PSR%) in Intervention Clusters at Time 2
### Table 4.15

**Summary of Set Goals and Implementation Rate Across Tier 1 Setting-Wide PBS Domains**

<table>
<thead>
<tr>
<th>SWPBS Domain</th>
<th>Number goals set across settings</th>
<th>% Achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities and skill development</td>
<td>8</td>
<td>44</td>
</tr>
<tr>
<td>Staff management</td>
<td>10</td>
<td>70</td>
</tr>
<tr>
<td>Physical environment</td>
<td>8</td>
<td>75</td>
</tr>
<tr>
<td>Relationships</td>
<td>7</td>
<td>71</td>
</tr>
<tr>
<td>Key working</td>
<td>13</td>
<td>39</td>
</tr>
<tr>
<td>Communication and social interaction</td>
<td>8</td>
<td>38</td>
</tr>
<tr>
<td>Health and wellbeing</td>
<td>7</td>
<td>71</td>
</tr>
<tr>
<td>Wider Organisation</td>
<td>8</td>
<td>63</td>
</tr>
</tbody>
</table>
Discussion

The present study aimed to examine the impact of implementing a systemic model of PBS on both adults with ID and the staff that support them using what can be considered a robust empirical approach. Significant advances in staff knowledge of PBS were observed, although no statistically significant changes were detected in social validity of the intervention or attitudes of staff to distressed behaviour. Statistical analysis of outcomes did not detect any significant changes in the quality of life or distressed behaviours for adults with ID as a result of the intervention. Each outcome reported will be explored in the context of extant literature. Finally, the limitations of the study and the implications for future research will be considered.

Proportionately, most adult participants with ID were diagnosed with a severe to profound impairment, sometimes referred to as PIMD, in both TAU and intervention groups. There are considerable methodological challenges in measuring QOL for this demographic, as neurotypical people can have difficulty understanding their communications (Nieuwenhuijse et al., 2019). People with PIMD are usually reliant on proxy informants, and as such the relationship and understanding between the individual and their proxy is important (Bertelli et al., 2019). It is interesting to note that a significantly greater proportion of HCA staff were present in both intervention and TAU groups. HCA’s have the lowest salary scale and qualification requirements of DSP in the social care sector, due to service providers attempts to supply “innovations on a shoestring” (Mathieu et al., 2020, p. 4). Concerns with staff retention and turnover is an ongoing concern in disability services, especially in respect to DSP (McKenzie, Metcalfe, et al., 2021). The impact of limited skills, questionable job satisfaction and knowledge of and relationship with the supported adult need to be considered when interpreting the QOL results garnered in this
study.

QOL outcomes reduced slightly more in the TAU compared with the intervention group. Although these results were not statistically significant, they may suggest that the setting-wide PBS intervention had some slight effect on limiting the impact of the pandemic and other factors on the QOL of study participants. It is widely evidenced that the covid-19 pandemic significantly impacted the quality of the lives of people around the world in many ways (Courtenay & Perera, 2020; Doody & Keenan, 2021; El Keshky et al., 2020). It is difficult to draw any further conclusions from these results with the methodological challenges experienced in the implementation of the study, which are described in greater detail in the next chapter. What this study does evidence is the continued complexity in exploring QOL for this population group, and that further research is required in that pursuit.

A slightly greater, though not statistically significant, decrease in distressed behaviour was observed in the intervention group compared with the TAU group. Calculated outcomes were comparatively low across all participant groups considering the range of possible scores for this measure. These results may illustrate the positive impact of the existing behaviour support service in the organisation on frequency of distressed behaviour prior to the commencement of the setting-wide PBS intervention. PBS is well evidenced to reduce distressed behaviour in this population group (Bosco et al., 2019; Christopher & Horsley, 2016; Martin, 2015b). This may also account for the relatively high treatment acceptability of setting-wide PBS scores observed across groups. Again, these scores increased marginally across both groups, but this increase was not statistically significant.

The introduction of tier 1 setting-wide PBS supports when there is an established tier 3 service in an organisation is notably under researched (Worcester & Jordan, 2016) and the most effective means of investigating the impact of introducing another layer of PBS
intervention demands more investigation.
There is an assumption that staff conceptions regarding the underlying causes of distressed behaviour can influence their response to that behaviour in their practice (Hastings, 1997). Setting-wide PBS workforce development programmes emphasise the importance of understanding the functions of distress in order to prevent these behaviours and enhance quality of life (Carr & Horner, 2007). It may then be anticipated that effective setting-wide PBS interventions would result in measures of staff attitudes showing higher scores in causal attributes such as reinforcement, environmental factors, and engagement. Results in the present study indicated that in both TAU and intervention groups, staff were more likely to attribute distress to mentalistic accounts than any other factor at baseline, and this did not change following intervention. The workforce development programme was not delivered as originally intended due to Covid-19 pandemic related restrictions. One of the most important changes was the required suspension of the in-person components of the programme, namely behavioural skills training (BST), and participant coaching. It is well evidenced that instruction in the absence of on-the-job coaching and evidenced skill development strategies can be a barrier to translating learning to practice (Deveau & McGill, 2016; Gormley, Healy, Doherty, et al., 2019; Hume et al., 2021). This may account for the lack of diffusion of learning by practice leaders in the study to their colleagues in their respective work settings. Transformation of the causal attitudes of staff participants to distressed behaviours are unlikely, without diffusion of innovation.

Practice leaders’ knowledge of the content of the workforce development programme was statistically evidenced across all nine of the training sessions. This demonstrates that the instruction component of the intervention was effective in delivering the learning objectives in an e-learning format. This finding in the context of the outcomes relating to staff perceptions,
and the QOL and distressed behaviour results, further supports the significance of including skill development and on the job coaching components in workforce development. The impact of knowledge acquired will need to be investigated to determine the extent to which this alters skills. Component analysis of the assorted mechanisms of setting-wide PBS in adult settings is an important area of investigation in future research.

Where treatment fidelity data was available, results indicate some success in implementing setting-wide PBS goals in intervention settings. The greatest number of goals set were in the key working domain. This component relates to the skills of DSP in the setting.

Interestingly, the implementation rate for this domain was the second lowest across settings, at 39%. All settings identified that the greatest area of development was the skill set of the DSP but were largely unsuccessful in achieving the skill development goals set for this cohort. Frontline staff in residential settings have reported feeling undervalued, unsupported, and having insufficient training and resources to meet the demands of their role, and these findings may add further backing to these claims (Brophy et al., 2019; Smyth et al., 2015). Conversely, the staff management domain had the second highest number of goals set across settings but achieved a relatively high implementation rate (70%). These results imply that while the necessary policies, procedures and structures are in place to manage DSP, this does not seem to translate into effective skill development and experiences in this cohort. This provides another example of the theory to practice gap, where organisational strategic plans and policies do not necessarily translate to the people that have the most contact with the people supported, DSP.

There were several limitations in the study. The impact of the Covid-19 pandemic on the planned roll-out of the intervention and research design was substantial and is detailed in
5. It must also be considered that the adoption of a heterogeneous participant selection criteria,
while allowing for ease of recruitment and generalisable results, may have somewhat diluted
treatment effects. McGill et al. (2018) in their examination of setting wide PBS used a
selection criterion (i.e., engagement in some form of distressed behaviour) that may have
allowed for the observation of significant outcomes. It is also important to note that not all
staff participants remained in their allotted treatment groups for the duration of the
intervention due to staff shortages and turnover. It was not possible to measure the extent to
this crossover as the location of individual DSP were not specifically tracked. Attrition rates
for DSP was measured however as 38%, and at 30% for PL’s, which poses a threat to the
validity of the research (Dumville et al., 2006). The lead researcher was an employee and the
behaviour support specialist in the host organisation. While this inevitably led to elements of
role duality and challenges, it is an essential feature of insider action research where
members of an organisation undertake a research role in addition to the normal
responsibilities, they hold within that organisation (Holian & Coghlan, 2013). Finally, while
implementation fidelity was measured in some intervention settings, overall implementation
of setting-wide PBS in the organisation was not specifically measured or evaluated. A
roadmap to implementation that provides guidance for organisations as well as an evaluation
tool, like those developed in educational settings (Sugai & Horner, 2020) would be an
important area for future research. Consequently, outcomes of the study need to be
interpreted with caution.

Randomised controlled trials (RCT’s) are widely regarded as the ‘gold standard’ for
examining the efficacy of treatment interventions (Bickman & Reich, 2017; Webber &
Prouse, 2018). Undertaking this research design can be a challenge, even for well-resourced
and experienced multidisciplinary research teams in controlled clinical settings (Ersek et al.,
2012). This intricacy is amplified when applying evidenced frameworks with participants
with cognitive
and communication impairments, such as adults with intellectual disabilities and other comorbidities (Mulhall et al., 2018). It has been argued that RCT frameworks, while excellent for testing the efficacy of pharmacological interventions, may not be an appropriate option for examining the impact of behavioural interventions due to the multifaceted interactions between people under real-life conditions (Hallfors & Cho, 2007). The lack of available quality RCT’s in the sphere of intellectual disability research and the methodological and practical challenges experienced by those who have attempted this design substantiates this position (Feldman et al., 2014; Mulhall et al., 2021). Difficulties with recruitment, organisational commitment and staff workload have been reported (Lennox et al., 2010; Lennox et al., 2005). This may in part account for the lack of statistical significance found in most of the outcomes measured in this study. The efficacy of PBS in respect to clinical effectiveness has been questioned due to similar methodological challenges with implementation experienced by practitioners and researchers in the field (Hunter et al., 2020; Strydom et al., 2020). Quasi-experimental alternatives to RCT such as Regression Point Displacement (RPD), Regression Discontinuity (RD) or Propensity Score Matching (PSM) might provide a solution to these difficulties (Gorrall et al., 2015). Coyne and colleagues (2018) successfully employed an RD design to investigate a multi-tiered system of support to enhance supplemental reading in an educational setting, so this design shows promise for examining systemic interventions. The resounding need for continued investigation in real- world settings using a mix of appropriate methods is unmistakable.

It is imperative that the non-significant results of this pragmatic cluster RCT are not misinterpreted as indicating that setting-wide PBS is an ineffective intervention for adults with ID living in community-based settings. This model of intervention is well evidenced with other populations and there is emerging support when implemented with vulnerable
adults (Freeman et
al., 2005; Lee & Gage, 2020; Simonsen et al., 2011). Rather, these results highlight the necessity for further investigation. Gates and Ealing (2019) succinctly describe that “there is no way of discriminating between non-significant results that derive from chance or lack of power…except by more research” (p. 2). These results provide support for the need to consider other empirical approaches, and to examine implementation of interventions rather that focus solely on outcome measures (Hasson, 2010; Hull et al., 2019; McKenzie, McNall, et al., 2021).

Mixed methods research describes an approach were researchers collect and analyse both qualitative and quantitative data within the same study (Bowers et al., 2013). Multiple logics are employed when a variety of research methodologies are used to understand and explore a topic (Olsen, 2019). Qualitative methods are a constructive tool in implementation research as they support consideration of complex issues, such as how and why endeavours to implement best practices may succeed or fail (Hamilton & Finley, 2019; Hull et al., 2019; Sarre et al., 2018; Shorten & Smith, 2017). Augustsson and colleagues (2015) evaluated implementation fidelity in an organisational level occupational health intervention using a mixed methods approach and found that consideration of local context or ‘culture’ was fundamental. Future real-world study should explore the development and use of research designs aimed at exploring and explaining variations in implementation settings rather than adopting approaches aimed to control this occurrence.
Chapter 5

A Process Evaluation of a Pragmatic Cluster Randomised Control Trial Investigating the Implementation of Setting-Wide PBS in an Adult Disability Setting
Effecting empirically robust clinical trials in any setting is a challenge. Insider action research (IAR) where the researcher is also an employee of the host organisation adds further complexity to this feat. Achieving this during a global pandemic however presents its own unique set of contests. Detailed description and exploration of the challenges faced by a research team in these circumstances provides essential contribution to the science of implementation, in the delivery of a ‘snakes and ladders’ guide to future researchers. Process evaluations are increasingly performed with pragmatic randomised controlled trials (RCT) of complex health service interventions and provide essential detail to enrich comprehension of RCT results (French et al., 2020). The aim of this chapter is to provide a thorough description of the experiences of conducting a pragmatic cluster RCT to test the impact of a systemic model of positive behaviour support in a community-based residential setting for adults with intellectual disabilities. This chapter will describe the decision-making process in the context of a rapidly changing environment, while attempting to retain internal and external validity of research outcomes.

**Study Context**

IAR describes the procedure in which an employee of an organisation undertakes a specific research role in addition to the normal functional roles they hold in an organisation (Holian & Coghlan, 2013). Twenty years of experience working as a behaviour support specialist in adult disability settings had shown that positive outcomes for individual interventions were frequently short-lived (Carr et al., 1999), and there was often a misconception of PBS as a behaviour management or crisis intervention approach rather than a proactive prevention focused model of intervention (Sugai & Simonsen, 2012). Setting or school-wide PBS is a proactive prevention based multi-tiered framework which provides a
systemic approach to provide
supports for all participants within an organization (Sugai & Horner, 2009). Chapter 4 details a research protocol to investigate the implementation of tier 1 setting-wide PBS in residential settings for adults with intellectual disabilities using a cluster RCT design. Outcomes were reported by examining distressed behaviour and quality of life of adults with ID; and perceptions, knowledge, treatment acceptability and implementation fidelity of direct support personnel (DSP).

**Decision 1 – Establishment of the Setting-Wide PBS Working Group**

Senior management in the organisation proposed the establishment of a steering group to administer the execution of the research project in September 2019. This working group consisted of a) operations manager, b) director of services, c) people, culture and development manager, d) assistant director of services, e) community services manager – PBS focus and e) behaviour support specialist/lead researcher. A briefing was held at the opening meeting of this forum outlining research and implementation plans. Terms of reference for the working group were developed and agreed in October 2019 and are summarised in Table 5.1.
Table 5.1

Setting-Wide PBS Working Group Terms of Reference

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statement of purpose</td>
<td>To administer the operation of the positive behaviour support policy across all services within the organisation</td>
</tr>
<tr>
<td></td>
<td>To supervise the execution of the funded research project: “System-wide PBS in an Irish residential service for adults with ID”</td>
</tr>
<tr>
<td>Membership</td>
<td>Operations Manager</td>
</tr>
<tr>
<td></td>
<td>Director of Services</td>
</tr>
<tr>
<td></td>
<td>People, Culture and Development Manager</td>
</tr>
<tr>
<td></td>
<td>Assistant Director of Services</td>
</tr>
<tr>
<td></td>
<td>Community Services Manager</td>
</tr>
<tr>
<td></td>
<td>Behaviour Support Specialist</td>
</tr>
<tr>
<td>Accountability</td>
<td>Members will report back to the appointed chair within agreed timelines</td>
</tr>
<tr>
<td>Meetings</td>
<td>Group will meet monthly in the main administrative building</td>
</tr>
<tr>
<td></td>
<td>Dates will be scheduled and communicated by appointed administrative support person</td>
</tr>
<tr>
<td></td>
<td>Agenda items will be standardised for meetings. AOB items can be communicated to the appointed chair at least one week before the meeting</td>
</tr>
<tr>
<td></td>
<td>Note taker will be appointed at each meeting and notes circulated to all members in accordance with GDPR following meeting for approval.</td>
</tr>
<tr>
<td>Review</td>
<td>TOR for the group will be reviewed on a yearly basis</td>
</tr>
</tbody>
</table>

Decision 2 – Amendments to Study Protocol Due to Onset of Covid-19 Pandemic

In March 2020 a general statement was communicated by the academic institution declaring that all research involving direct contact with human participants must cease with immediate effect (Casey et al., 2021). In parallel to this, the Health Service Executive announced strict restrictions across residential settings that prevented unwarranted visitors, and all research related activity was instructed to cease in light of greater risk prevention priorities across services (Dept. Of Health, 2020). Job descriptions and role responsibilities were suspended in the host organisation as the entire staff team combined efforts to safeguard the vulnerable adults and maintain safe service provision. During this time, the intervention and research protocol was amended to account for the Covid-19 pandemic restrictions. For the research to continue, no
direct contact could take place between the research team and the study participants. Outcome measures were revised to remove observation-based methods. One of the dependent variables in the original study was quality of staff supports and resident engagement as they have been associated with improved quality of life in the extant literature (Allen et al., 2013; McGill et al., 2018). The Active Support Measure is a four-point 15 item rating scale designed to determine the nature and quality of staff support during an observational period (Mansell et al., 2002).

Simultaneously, the engagement in meaningful activity rating scale measures resident engagement across four points (Mansell et al., 2002) to determine impact on the experience of the adult supported. These dependent variables were omitted as they required direct contact with the study participants.

The online platform Qualtrics (http://www.qualtrics.com) was used to collect survey data. Two digital surveys were developed, one for adults with ID and one for DSP. The original study protocol incorporated a short induction for DSP supporting adults with ID to complete outcome measures effectively, which including self-report and proxy reporting. The capacity of DSP to complete outcome measures is an important consideration in intellectual disability research (Emerson et al., 2013). Research on digital skills of social care staff indicates that most staff feel confident in terms of basic online skills (Stadler & Burtney, 2021), so the completion of online surveys should fit within their skill set. The survey induction was adjusted to take place via phone call as video conferencing equipment was not yet available across the service settings. It is also important to note the DSP training in completion of baseline surveys was not standardised. These factors may have impacted the quality of the baseline data collected. The conversion of the outcome measures to a digital format posed a further logistical challenge. Community residential houses had one computer
used for work-related purposes with a setting specific login for
applications such as email. A proportion of DSP did not access their individual staff email regularly, if at all. This required a degree of progress chasing from the setting-wide PBS working group to remind staff to check their individual email account, and in some cases, coaching with how to access work emails. DSP were mainly completing surveys during their working hours when they were providing supports for adults with ID living in the community houses. While the survey data for adults with ID was thoroughly completed, many surveys for DSP was partially completed. A selection of DSP did not enter their job description or work setting, which may be suggestive of a desire to remain completely anonymous in their feedback. It is likely that DSP prioritised the data collection for the adults they supported, but prioritised other work-related tasks when it came to completing their own survey data. This affected the quality of the data collected.

It was decided to randomise residential settings rather than individuals within these settings to reduce potential crossover between intervention and TAU groups which can weaken treatment effects (Campbell, 2000). Randomisation was completed using an online researcher randomisation tool (www.randomiser.org) following baseline data collection which is a standard approach for RCT’s (Barratt et al., 2016; Shields & Twycross, 2005). A coin toss method was then used to determine intervention and treatment as usual groups. The setting-wide PBS working group was informed of the randomisation results. Practice leaders were identified either by the group members or by individual staff putting themselves forward to the group for consideration. It was decided that a staff member in a supervisory role (e.g., person in charge, social care worker or nurse) would be identified in each residential setting, and then a second staff member (e.g., healthcare assistant) in a direct support role. The identification of participants by the working group lead to some challenges. Lack of participation in decision making is
recognised as a prominent stressor by DSP working in learning disability services (Dyer & Quine, 1998; Judd et al., 2017). Not all identified participants expressed a desire to participate in the workforce development programme, which resulted in participant attrition early in the intervention. Finally, some members of the senior management and central function teams put themselves forward for the training. To avoid resentful demoralisation, where people can feel as though they are receiving less-than-optimal treatment (Schwartz et al., 1997), the study was communicated as phase 1 of an organisational commitment to workforce development for the entire service.

**Decision 3 – Amendments to Intervention Protocol Due to Onset of the Covid-19 Pandemic**

The workforce development training content for tier 1 setting-wide PBS was converted to an e-learning format. This required rapid development of skills in remote teaching by the lead researcher (Alqahtani & Rajkhan, 2020; Barker, 2007; Hodges et al., 2020; Olson et al., 2021; Peñarrubia-Lozano et al., 2021). The duration of sessions was reduced, and the content amended to fit an e-learning environment. A survey of e-learning platforms was completed and presented to the setting-wide PBS working group and a final decision to use Microsoft Teams was reached. The IT department ordered headsets and webcams for residential houses participating in the study, and for the main administrative building. It was agreed that a couple of hot desks would be available in this building to allow some participants to engage in online training sessions away from their usual workplace to avoid distractions during training.

The behavioural skills teaching (BST) components, using the hierarchical task analyses detailed in Chapter 2 were regrettfully removed from the online training content. This decision was reached due to GDPR concerns regarding the use of camera equipment in
the homes of adults with ID, and because of the logistical challenges of conducting BST
online. It is very
likely that this significantly impacted the efficacy of the workforce development programme as the skills teaching component was a fundamental piece (Gormley, Healy, O'Sullivan, et al., 2019; Qian et al., 2019; Sarokoff & Sturmey, 2004; Sarre et al., 2018).

The Microsoft Teams platform was used to host the live training sessions, share training resources, and evaluate learning by embedding Microsoft forms to collect pre and post knowledge test data. This posed a significant methodological challenge. Most of the cohort of practice leaders had not used this specific platform before. Some staff had never used video conferencing, webcams or headsets and needed supporting and coaching in the use of the equipment and technology. Also, all these new IT skills were being introduced during a global pandemic where DSP were under tremendous pressure in their roles supporting vulnerable adults (Bailey et al., 2020; Desroches et al., 2022). Training sessions were scheduled over a period of 8 months, commencing in July 2020, and concluding in March 2021. A decision was made by the lead researcher to record training sessions to allow participants to watch the session if they were unavailable to attend the live class (Ersek et al., 2012). Finally, a series of remote participant coaching sessions were scheduled across intervention settings every two weeks throughout the duration of the training programme. The goal of these coaching sessions was to provide support for participants to implement setting-wide PBS goals in their respective work settings.

Implementation Challenges

Adults with ID

Participatory action research exploring the impact of the pandemic in the lives of adults with ID indicated that adults missed attending their work and day services, experienced isolation, anxiety, and fear and were confused as information was not always shared in an accessible format (McCausland et al., 2021). Positive effects were also
described, including an enhanced sense of autonomy, greater use of and mastery of technology, and a gentler pace of life (McCausland, Luus, et al., 2021; Murphy, 2020).

Service provision focused on risk management and custodial care in the context of high absenteeism and unpredictable regulatory changes (Desroches et al., 2022; Nyashanu et al., 2020). Tier 1 setting-wide PBS components such as meaningful activities and skill development, and supporting social interaction and relationships were often unattainable in this situation. Baseline data collection commenced in May 2020. QOL and distressed behaviour data were likely impacted by these factors related to the pandemic and confounds interpretation of the findings of the study. The future incorporation of observational data and mixed methodological approaches offer evidenced resolutions to these concerns (Beadle-Brown et al., 2021; McCausland, Guerin, et al., 2021; Murphy, 2020).

**Role Duality**

Real-world work-based research provides a means to conduct valuable investigations on issues which have surfaced in an organisation where a person is employed as part of their existing role and established administrative connections (Holian & Coghlan, 2013). Often, the dilemmas identified by insider action research (IAR) practitioners are messy and difficult to operationalise and quantify (Coghlan et al., 2019). Challenges with role duality emerged early in the research project. Supervision sessions between the lead researcher/practitioner and their line manager frequently required a justification of time spent on the administration of the research.

Previous studies have reported challenges with administrators lacking familiarity and/or interest in research protocols (Allen et al., 2013; Hickman et al., 2008; Qian et al., 2015). Well-defined regular communication of the administration of the study may have prevented this. Justifiably, organisational priorities had changed in the milieu of a global pandemic and
there was more focus on reactive responses to behaviour and flexibility in role responsibilities (Department of
Health, 2020; Doody & Keenan, 2021; Hughes & Anderson, 2020). In October 2020, an agreement was reached whereby the lead researcher stepped down from clinical responsibilities to focus solely on the investigation, and the organisation employed an alternative full time behaviour support specialist in Feb 2021. The lead researcher commenced home working from this time and continued this for the remainder of the study. An awareness of the potential for professional conflicts can protect from the impact of these concerns on insider research outcomes (Fleming, 2018). Smart working solutions developed during the pandemic also provide important applications for functioning in the ‘new normal’ work environment (Bolisani et al., 2020), and are notable considerations in future insider action research undertakings.

Setting-Wide PBS Working Group

The setting-wide PBS working group did not meet after November 2019. An organisational coronavirus task force was established in March 2020 and all setting-wide PBS working group members were included in the membership. The administration of the research was suspended at this time under the direction of the HSE (Department of Health, 2020) and the academic institution. The impact of these decisions on a global scale have been widely reported (Rashid & Yadav, 2020; Stiles et al., 2022). It took some time to revise the research and intervention protocols for approval under the everchanging dictates. The study recommenced in May 2020 but the setting-wide PBS working group did not resume operations. Remaining administration of the study with the host organisation resumed in a haphazard manner. This may have reflected a waning of organisational commitment and interest in the study, in light of other more pressing matters such as risk management, which has been reported in other similar investigations (Hickman et al., 2008; Lam et al., 2018). Enhanced educational approaches for leadership roles and systemic implementation tools
may help to address these concerns going
forward (Horner et al., 2004; Leitch, Jones, & MacDonald, 2020; OSEP Technical Assistance Center on Positive Behavioral Interventions and Supports, 2020; Simonsen et al., 2011; Sugai & Horner, 2020).

**Administrative Turnover**

Long-term residential facilities are deemed to be highly volatile environments due to high attrition and turnover of staff, and capricious regulatory fluctuations (Buckwalter et al., 2009; Deschodt et al., 2017). Significant changes in the structure and composition of the operational management team occurred in the host organisation during the investigation. The service was in the latter stages of decongregation when the research commenced and had a provisional tri-party memorandum of understanding (MOU) in position with the HSE and another local disability service provider to complete this process. This MOU terminated in January 2020 and required that a permanent chief executive officer (CEO) be appointed to assume overall responsibility for the organisation. An interim CEO was appointed at that time and some necessary alterations in the organisational team ensued. The transformed management structure may not have buoyed the same commitment to research and development as the previous establishment. Approaches to support and sustain organisational commitment to practice development projects could help to address these factors (Goh & Marimuthu, 2016).

**DSP Attrition and Cross-Contamination**

The coronavirus pandemic was first reported in China in December 2019 and the first case was recorded in Ireland in February 2020 (Perumal et al., 2020). The WHO declared Covid-19 a pandemic on the 11th March 2020 (World Health Organisation [WHO], 2020). Severe staff shortages due to self-isolation and unavailability of testing particularly in the early stages of the pandemic were experienced in many settings (Desroches et al., 2022;
Nyashanu et al., 2020).
Public health guidance advised services to minimise transference of DSP between residential settings, but this was difficult because of the need to provide safe services in the context of high absence rates (Department of Health, 2020; Desroches et al., 2022). Persons in charge (PICs) are responsible for the overall management of individual residential settings in the organisation.

Because of their leadership position, these DSP were specifically identified for inclusion in the tier 1 PBS workforce development programme implemented in treatment settings. However, as the study progressed, PICs were habitually required to shoulder the administration of other residential settings that were allocated as TAU clusters. This transference was unavoidable in the context of the pandemic, but likely confounded the intervention. Finally, research requires considerable resources in regards to time commitment from DSP and management (Mentes & Tripp-Reimer, 2002) which was in short supply at the time of the study.

**Implementation fidelity**

Implementation fidelity was impacted in several ways. Practice leader attendance at live remote training sessions was measured, and results showed that attendance consistently decreased across the nine sessions, despite progress chasing by the lead researcher and some members of the operational management team. The attendance record for the tier 1 setting-wide PBS live training sessions is presented in Figure 5.1. Anecdotal feedback from staff indicated that work commitments may have been the cause of the dwindling participation rates. As sessions were delivered via remote learning, DSP usually accessed sessions on computers located in the residential settings. Time allowances were supposedly afforded in staff rosters for participation in training and two hot desks were available in the administrative building for staff to use.
The hot desks were used on one occasion by a single DSP participant for a live training session. Several participants chose to watch the recordings of the live sessions during night shifts to avoid distractions. It was challenging to facilitate content related discussions, feedback and group activities as fewer participants attended the live remote sessions. Virtual participant coaching sessions were offered to practice leaders throughout the intervention. The purpose of these sessions was to provide the opportunity for participants to discuss and evaluate progress with setting specific PBS goals, rehearse skills and receive feedback from the research team.

Coaching is an essential tool for effective learning and closing the theory to practice gap often experienced in staff training programmes (Claridge & Lewis, 2021; Cox & Davis, 2019; Davis et al., 2019; Wardale et al., 2014). Engagement in coaching was poor. Sessions were scheduled with participants via email and calendar software, but only three intervention settings engaged in coaching intermittently. Consideration of blended learning advances
(Almendingen et al., 2021)

Setting-specific implementation records were developed for all intervention settings by participants with the support of the research team in July 2020, using the Periodic Service Review framework (LaVigna et al., 1994). Participants were instructed to document achieved goals monthly and calculate this score as a percentage of goals set. It was planned that these scores would be displayed graphically, and the data used to make decisions regarding setting-wide PBS plans as the intervention progressed (Baker & Shephard, 2010; McGill et al., 2018). PSR data was reported in five (45%) of settings, and this data was calculated on completion of the intervention programme, providing two data points only (pre and post training). A setting-wide implementation record for all components of the multi-modal treatments package was not utilised in the study and is an important area for further research (Sugai & Horner, 2020; Sugai & Horner, 2006).

**Research Design**

While RCTs are considered the gold standard in clinical trials, experiences in conducting this type of investigation with adults with complex support needs in long-term care illustrate the challenges of maintaining internal validity, often at the expense of external validity, when adopting this methodological format (Buckwalter et al., 2009; Deschodt et al., 2017; Maes et al., 2021; Mulhall et al., 2018; Van Ness et al., 2012). Implementation science offers some important and flexible solutions to these barriers. Consideration of mixed methods, quasi-experimental designs such as regression discontinuity and flexible approaches focused on the process of intervention, that allow for the application of creative solutions in a timely and practical manner, deserve more consideration in the domain of PBS and ID research (Atkins et
al., 2017; Bauer & Kirchner, 2020; Hasson, 2010; Hull et al., 2019; McKenzie, McNall, et al., 2021; Sarre et al., 2018; Skouteris, 2021; Smolkowski et al., 2019). A summary of implementation concerns, and potential resolutions based on the extant literature are presented in Table 5.2.
Table 5.2
Potential Resolutions to Implementation Issues Identified in the Process Evaluation

<table>
<thead>
<tr>
<th>Issue</th>
<th>Specific Concerns</th>
<th>Potential Resolutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisational factors</td>
<td>Unfamiliarity/confusion regarding specifics of research</td>
<td>Setting-wide PBS team leading research and implementation (Grasley-Boy, Reichow, van Dijk, &amp; Gage, 2020)</td>
</tr>
<tr>
<td></td>
<td>Function of administrative steering group</td>
<td>Enhanced education for leadership roles (Leitch, Jones, &amp; MacDonald, 2020; Tomlinson et al., 2017)</td>
</tr>
<tr>
<td></td>
<td>Administrative Turnover</td>
<td></td>
</tr>
<tr>
<td>Researcher/practitioner role</td>
<td>Role Duality</td>
<td>Awareness of potential for professional conflicts (Fleming, 2018)</td>
</tr>
<tr>
<td></td>
<td>Seen as outsider/WFH</td>
<td>Smart working solutions (Bolisani et al., 2020)</td>
</tr>
<tr>
<td></td>
<td>Poor presence in organisation</td>
<td>Increased visibility in setting (Messmer, 2004)</td>
</tr>
<tr>
<td>DSP factors</td>
<td>Engagement with e-learning</td>
<td>Blended learning approaches (Almendingen et al., 2021)</td>
</tr>
<tr>
<td></td>
<td>Time constraints and work commitments</td>
<td>BST and coaching (Claridge &amp; Lewis, 2021; L Gormley et al., 2019)</td>
</tr>
<tr>
<td></td>
<td>Turnover and attrition</td>
<td>Workplace learning solutions (Anderson, 2021; Tungland, 2021)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Incorporate possible high attrition rate in sample size calculation (Lam et al., 2018)</td>
</tr>
<tr>
<td>Supported Adult with ID factors</td>
<td>Complexity of consent in research</td>
<td>Supports for consent (Maes et al., 2021; Scholten, Gather, &amp; Vollmann, 2021)</td>
</tr>
<tr>
<td></td>
<td>Challenges of self-report/proxy reporting – accuracy of measures</td>
<td>Observational data (IOR) (Beadle-Brown et al., 2021)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Qualitative data (Darragh McCausland et al., 2021; T. Murphy et al., 2020)</td>
</tr>
<tr>
<td>Ethical factors</td>
<td>Reliance on proxy reporting – high turnover</td>
<td>Observational data (IOR) (Beadle-Brown et al., 2021; McGill et al., 2018)</td>
</tr>
<tr>
<td>Methodological factors</td>
<td>Threats to validity</td>
<td>Mixed methods (Olsen, 2019; Shorten &amp; Smith, 2017)</td>
</tr>
<tr>
<td></td>
<td>Working with limited resources</td>
<td>Focus on implementation data (Peter Mulhall et al., 2018; Van Ness, Peduzzi, &amp; Quagliarello, 2012)</td>
</tr>
<tr>
<td></td>
<td>Implementation drift from protocol</td>
<td>Use multi-modal fidelity tools/measure (Gelbar et al., 2015; Sugai &amp; Horner, 2020)</td>
</tr>
<tr>
<td>Resource factors</td>
<td>Cost – staff time</td>
<td>Efficiency measures (Hassiotis, Strydom, Crawford, Hall, Omar, Vickerstaff, Hunter, Crabtree, Cooper, &amp; Biswas, 2014; Romeo, Knapp, Tyer, Crawford, &amp; Oliver-Africano, 2009)</td>
</tr>
</tbody>
</table>

Conclusions

In the absence of ideal clinical testing environments with unlimited resources, creative and flexible approaches to evidencing effective interventions to enrich the quality of life and
quality of services for adults with ID must be considered. The decisions reached and
described in this chapter reveal the research teams best judgements given the unprecedented
circumstances encountered during the expedition of the research. The use of models and
practices founded in implementation science merit a place in the intervention framework of
setting-wide PBS for adults with ID in prospective trials.
Chapter 6

A Qualitative Investigation of the Implementation of Setting-Wide PBS in an Adult Disability Setting
The outcomes of Chapters 2, 3, 4 and 5 collectively illustrate that the sustainable implementation of evidence-based models of practice by direct support personnel (DSP) is one of the greatest challenges faced by disability service providers. Additionally, there are global reports of the struggles to maintain a sustainable workforce of DSP (Rhee et al., 2020; Ryan et al., 2019). Behaviours of concern have been identified as the single biggest issue faced by DSP working in disability services, which can impact turnover (Bowring et al., 2017). In Ireland, attempts at decreasing service provision costs during the fiscal crisis in the late 2000’s subsequently resulted in substantial increases in agency pay and HSE superannuation expenditure (Whyte et al., 2020). As staffing is often the largest outgoing cost for care service providers, a movement towards sustainable, effective, evidence-based systems of support to safeguard provision of future resources for those with the greatest need was induced (Department of Health, 2012).

Establishing the effectiveness of an innovation does not necessarily translate into its routine dissemination into practice (Bauer & Kirchner, 2020). This issue is clearly demonstrated with the model of positive behaviour support (PBS). There is significant evidence that PBS is successful in generating positive outcomes for individuals, staff and organisations (Allen et al., 2012; Bowring et al., 2020; Gao, 2020; Grey & McClean, 2007; Hassiotis et al., 2014; Hunter et al., 2020; Martin, 2015b; McGill et al., 2018; Strydom et al., 2020). There has been a focus on staff training programmes in PBS to encourage adoption of the model in practice (Dench, 2005; Hassiotis et al., 2018; Hastings, 2005; McClean et al., 2005; Stocks & Slater, 2016). The latest advancements in PBS emphasise a systemic approach to the provision of rights and evidence-based cultures of support to enrich quality of life and ease distressed behaviours for all individuals in an organisation (Freeman et al., 2005; Gore, Sapiets, Denne, Hastings, Toogood,
MacDonald, Allen, et al., 2022; McGill et al., 2018) reducing the pressure on individualised supports which are often in limited supply. These systemic applications typically include large-scale workforce development programmes (Campbell, 2010; Leitch, Jones, & MacDonald, 2020; McKenzie, McNall, et al., 2021). Despite the evidence base for effective practices, less than 50% of clinical interventions are adopted into routine procedures (Morris et al., 2011). While it is agreed that there is no “magic bullet” to transforming professional practice (Michie et al., 2005) implementation science offers a route to better understand how this might be achieved.

Eccles and Mittman (2006) defined implementation science as “the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practice in routine practice and, hence, to improve the quality and effectiveness of health services” (pg. 1). This approach allows for investigation across multiple strata of service provision, from individuals, to settings to entire organisations (Bauer & Kirchner, 2020). A development in implementation research focused on the influences of health-related professional behaviour, is the Theoretical Domain Framework, or TDF (Atkins et al., 2017). This conceptual structure integrates 33 theories of behaviour and behaviour change into 14 domains or clusters. The TDF has been cited in over 7500 peer-reviewed publications since 2000 (Web of Science accessed Oct 2021) and provides a conceptual lens to inspect the environmental, social and emotional influences on behaviour (Atkins et al., 2017). Bossink and colleagues (2019) adopted the framework in their examination of physical activity supports for people with ID and highlighted the importance of theoretically valid exploratory procedures in future research. Overwijk and colleagues (2021) successfully used the TDF to investigate the needs of DSP to support people with ID in leading healthy lifestyles. However, this
framework has not yet been used to examine the implementation of setting-wide PBS in disability settings to the best of our knowledge and
may assist in providing some insight into the inconclusive results of the previously mentioned investigations in Chapters 4 and 5.

A corresponding theory supporting the TDF for changing behaviour is the COM-B model (Cane et al., 2012). This model proposes that at any given juncture, a specific behaviour would occur only if the individual concerned has the capability, opportunity and motivation to engage in that action (Michie et al., 2011). The capability dimension encompasses psychological and physical elements, opportunity contains physical and social features, and the motivation dimension contains both instinctive and introspective domains (Michie et al., 2011). Cane et al. (2012) demonstrated that the TDF mapped successfully on to the COM-B model, as illustrated in Table 6.1, and proposed that the use of the COM-B model could aid identification of domains that are likely to be important agents of behaviour change.
Table 6.1  

*Theoretical domains framework and COM-B domains*

<table>
<thead>
<tr>
<th>COM-B</th>
<th>TDF Domain</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capability</td>
<td>Knowledge</td>
<td>A recognition of the reality of something</td>
</tr>
<tr>
<td></td>
<td>Skills</td>
<td>A capacity or ability developed through training</td>
</tr>
<tr>
<td></td>
<td>Beliefs about capabilities</td>
<td>Acknowledgment of the certainty, reality or legitimacy of the consequences of a behaviour in a given context</td>
</tr>
<tr>
<td></td>
<td>Behavioural regulation</td>
<td>Focus on management or change of objectively observed or quantified events</td>
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<tr>
<td></td>
<td>Memory, attention &amp; decision processes</td>
<td>The capacity to recollect information, to focus specifically on features of the environment and make decisions based on that information</td>
</tr>
<tr>
<td>Opportunity</td>
<td>Social influences</td>
<td>Interpersonal practices that can induce others to alter their thoughts, behaviours, or emotions</td>
</tr>
<tr>
<td></td>
<td>Environmental context and resources</td>
<td>Various conditions of an individual’s environment and/or state that influences the development of capacities, adaptive behaviours, social competencies and autonomy</td>
</tr>
<tr>
<td>Motivation</td>
<td>Social/professional role and identity</td>
<td>A clear set of competencies and individual assets in a work/social setting</td>
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<td></td>
<td>Optimism</td>
<td>The assurance that positive outcomes will materialise, or anticipated goals will be achieved</td>
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<td></td>
<td>Intentions</td>
<td>A deliberate choice to engage in a specific behaviour or practice</td>
</tr>
<tr>
<td></td>
<td>Goals</td>
<td>A desired aim or ambition set by an individual</td>
</tr>
<tr>
<td></td>
<td>Beliefs about consequences</td>
<td>Acceptance of the validity or truth of a capacity that an individual can employ constructively</td>
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<tr>
<td></td>
<td>Reinforcement</td>
<td>The process of encouraging or establishing a belief or pattern of behaviour</td>
</tr>
<tr>
<td></td>
<td>Emotion</td>
<td>Innate or intuitive sentiment, as distinguished from reasoning or knowledge, by which the person seeks to process a significant event</td>
</tr>
</tbody>
</table>

The COM-B model has been widely used to examine facilitators and barriers to practice change across health care environments (Boyd et al., 2020; Cassidy et al., 2018; Lambe et al., 2020). Surr et al. (2020) adopted the framework to explore the barriers and
facilitators to
implementing dementia education and training in health and social care services in a mixed methods investigation, indicating promise for the use of this method to explore implementation of workforce development programmes.

Several researchers have used the domains to develop semi-structured interview schedules in qualitative investigations of practice change (Bossink et al., 2020; Brigg et al., 2020; Smith et al., 2019), illustrating the benefits of including qualitative research methodologies as part of systemic organisational change investigations (Garcia & Gluesing, 2013). This is significant in complex disability service provision, where traditional approaches to clinical research such as randomised controlled trials, can be problematic, specifically regarding ethics in randomisation and generalisability of results to “real world” settings (Mulhall et al., 2018; Mulhall et al., 2021). Qualitative methodologies involve the use of more intuitive data collection methods that more closely resemble “real-life”, have an interest in deriving meaning about why people do what they do, and acknowledge researchers’ perspectives, or bias, in the research process as a strength (Silverman, 2013). Additionally, deductive content analysis, which involves the reduction of qualitative data to a conceptual system or categorical framework, has been adopted in several implementation investigations (Jeong et al., 2018; Wilkinson et al., 2015). These methodological approaches provide a means for clinicians or scientists in real-world practice settings to investigate implementation of evidence-based interventions in order to improve outcomes for those administering and receiving treatments.

The aim of this study was to employ a qualitative research design to explore staff perspectives on the initial introduction of tier 1 setting-wide PBS in a community based residential setting for adults with ID, using the COM-B model as a conceptual framework, with a view to improving future implementation of this model in these settings. The main
research
question was to identify and describe the facilitators and barriers that DSP experienced when attempting to bring their learning about tier 1 setting-wide PBS into their practice in their respective work settings. We believe the current study to be the first to apply this model of implementation science to investigate the implementation of PBS. Content analysis of participant interviews was used to generate procedures to advance conversion of PBS knowledge to practice in disability service provision.

Methods

Research Team

An insider action research approach was used to conduct this investigation. Insider action research allows employees of an organisation to assume doctoral research focused on producing actionable knowledge for both the academic and practitioner communities, while developing their careers as practitioner-researchers (Coghlan, 2006a; Coghlan et al., 2019). The lead author had an undergraduate degree in psychology, a postgraduate master’s degree in applied behavioural analysis, specialist training in positive behaviour support and had worked in the field of intellectual disability and distressed behaviour for more than twenty years. They were employed as a positive behaviour support specialist by the host organisation since 2015 and received a scholarship award from the Irish Research Council in 2019 for a doctoral programme focused on implementation of setting-wide PBS. This topic was selected by the lead researcher, and approved by the host organisation, based on their experience of implementation challenges experienced in their role to date. The research assistant was a postgraduate student in applied psychology and was previously employed as a health care assistant in a direct support role by the host organisation for approximately 18 months, and had several years’ experience working in the disability sector.
Ethics, participants and setting

Ethical approval of the human subject’s protocol by the human rights committee in the host institution was granted in January 2021 and subsequently by an ethical research board at Trinity College Dublin in March 2021 (Approval ID: SPREC022021-04).

A total of 21 employees were invited to participate by email during the recruitment phase. Inclusion criteria were that participants had engaged in the research study described in Chapter 4 as practice leaders. This cohort of staff engaged, to varying degrees, in a longitudinal workforce development programme focused on universal (tier 1) PBS values and competencies. The core goal of this programme was to support participants to transfer PBS values and skills to their day to day work practices. Subsequently, 14 participants consented to the research and completed interviews. A minimum sample size of at least 12 participants has been recommended where the aim of the research is to understand common experiences among a group of reasonably similar individuals (Guest et al., 2006). Participant characteristics in respect to their position in the organisation are displayed in Table 6.2. Twelve participants were female and two were male. Further details of participant characteristics, such as work location, were purposefully not collected to protect the privacy of the study participants, and encourage participation. The research took place in the same setting as described in Chapter 4.
Table 6.2

Participants According to Role in the Service (n=14)

<table>
<thead>
<tr>
<th>Role in Organisation</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Care Assistant (HCA)</td>
<td>5 (35.8)</td>
</tr>
<tr>
<td>Person In Charge (PIC)/Team Leader</td>
<td>4 (28.6)</td>
</tr>
<tr>
<td>Senior Management Team (SMT)</td>
<td>4 (28.6)</td>
</tr>
<tr>
<td>Nurse (RNID)</td>
<td>1 (7.1)</td>
</tr>
</tbody>
</table>

Research Design

This study adopted a qualitative theoretical content analysis design (Braun & Clarke, 2013) using semi-structured interviews with direct support and management personnel. This deductive approach to qualitative research involves the exploration of specific theoretical frameworks in the analysis process (Braun & Clarke, 2013). This specific design was selected as the purpose of the research was to use a specific theoretical model of implementation science to gain insight into the barriers and enablers of adopting a systemic model of PBS in the setting. A semi-structured interview schedule based on the COM-B model was adapted from a similar schedule developed by Lambe and colleagues (2020). Questions were focused on participants’ capability, opportunity, and motivation to implement the imparted PBS competencies in their daily work and are provided in Table 6.3. Finally, the theoretical domains framework outlined in Table 6.1 (Cane et al., 2012) was adopted as a coding structure for analysis of the participant transcripts.
Table 6.3

Semi-structured Interview Schedule

<table>
<thead>
<tr>
<th>COM-B Domain</th>
<th>Interview Question</th>
</tr>
</thead>
</table>
| Capability   | - What training have you received in tier 1 setting-wide PBS practices?  
|              | - Are you confident in your knowledge of tier 1 setting-wide PBS procedures or do you think further training or supports are needed?  
|              | - What prompts are there to remind staff when and how to engage in tier 1 setting-wide PBS procedures in your work setting?  
| Opportunity  | - How is there a focus on encouraging adherence to tier 1 setting-wide PBS practices in your work setting?  
|              | - Do you have enough time to implement tier 1 setting-wide PBS practices for each person supported, or is that difficult?  
|              | - What materials are necessary (e.g., visual schedule) for tier 1 setting-wide PBS and are these always available to you in your work setting?  
| Motivation   | - What factors hinder you from adhering to tier 1 setting-wide PBS practices?  
|              | - What factors encourage you to adhere to tier 1 setting-wide PBS practices?  
|              | - Do you think adherence to tier 1 setting-wide PBS practices is important for the people you support and why?  

Procedure

Interviews were carried out by the lead and second researchers in May 2021.

Participants were recruited using a purposive sampling technique where staff that had completed a tier 1 setting-wide PBS workforce development programme in the host organisation were contacted by the research team by phone and/or email and provided with information about the study. It was made clear to all prospective participants that no identifying information would be gathered or used in the research, and that the content of their interviews would in no way impact on their role in the organisation. A follow up call was completed approximately one week later where staff either agreed or declined to consent
to the study. At this point, interviews were arranged at a time
convenient to the participant, which included evenings and weekends. Interviews were conducted by either the lead researcher or the research assistant based on availability, and used the semi-structured interview schedule presented in Table 6.3. Additional unscripted questions and responses were used at times where relevant (e.g., “could you tell me more about your experience of online learning?”). The research team met frequently to discuss interview experiences and approaches to promote consistency. All interviews were conducted remotely using the video conferencing platform Zoom (http://www.zoom.com). Audio recordings of the interviews were transcribed using an online transcription tool (http://www.otter.ai) which converted the audio recordings to a digital word processing file (.docx). Interviews ranged from 18 to 42 minutes in duration. The completed transcripts were meticulously checked for accuracy and anonymity by the lead researcher, and the original audio recordings were then deleted as per research protocol.

Analysis

A deductive content analysis approach was adopted in this study. A computer-based software package, MAXQDA (http://www.maxqda.com) was used to code the raw data. Participant transcripts were uploaded to the software package. The lead researcher set up data codes based on the 14 detailed theoretical domain framework descriptions provided in Table 6.1. The researchers then carefully read through each transcript while comparing the content to the predefined data codes. While reliability (such as inter-rater reliability) is not an appropriate standard for adjudicating qualitative research (Braun & Clarke, 2013), alternative approaches to uphold the trustworthiness of the data were adopted. A 29-point checklist of criteria for improving the trustworthiness of content analysis was used throughout the study and is provided in Table 6.4 (Elo et al., 2014).
Table 6.4

Checklist to Improve the Trustworthiness of a Content Analysis Study

<table>
<thead>
<tr>
<th>Phases of the study</th>
<th>Procedure</th>
<th>Checklist questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation Phase</td>
<td>Data Collection Method</td>
<td>How do I collect the most suitable data for my content analysis?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is the method the best available to answer the target research question?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Should I use either descriptive or semi-structured questions?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Self-awareness: What are my skills as a researcher?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>How do I pre-test my data collection method?</td>
</tr>
<tr>
<td>Sampling strategy</td>
<td></td>
<td>What is the best sampling method for my study?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Who are the best informants for my study?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What criteria should be used to select the participants?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is my sample appropriate?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is my data well saturated?</td>
</tr>
<tr>
<td>Organisation phase</td>
<td>Selecting the unit of analysis</td>
<td>What is the unit of analysis?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is the unit of analysis too narrow or too broad?</td>
</tr>
<tr>
<td></td>
<td>Categorisation and abstraction</td>
<td>How should the concepts or categories be created?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is there still too many concepts?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is there any overlap between categories?</td>
</tr>
<tr>
<td>Interpretation</td>
<td></td>
<td>What is the degree of interpretation in the analysis?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>How do I ensure that the data accurately represent the information that the participants provided?</td>
</tr>
<tr>
<td>Representativeness</td>
<td></td>
<td>How do I check the trustworthiness of the analysis process?</td>
</tr>
<tr>
<td>Reporting phase</td>
<td>Reporting results</td>
<td>How do I check the representativeness of the data as a whole?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Are the results reported systematically and logically?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>How are the connections between the data and results reported?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is the content and structure of concepts presented in a clear and understandable way?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Can the reader evaluate the transferability of the results (are the data, sampling methods and participants described in a detailed manner)?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Are quotations used systematically?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>How well do the categories cover the data?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Are there similarities within and differences between categories?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is scientific language used to convey the results?</td>
</tr>
<tr>
<td></td>
<td>Reporting analysis process</td>
<td>Is there a full description of the analysis process?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is the trustworthiness of the content analysis discussed based on some criteria?</td>
</tr>
</tbody>
</table>

Note: Content from Elo et al. (2014) p. 3
For example, double coding, where the transcripts were coded by both the lead researcher and the research assistant, was employed to assess the quality of the theoretical domain framework (Schreier, 2012). During the initial coding phase, 88% agreement was observed between the research team. Several research team discussions focused on collaborative consensus building increased this agreement rate to 96% at the conclusion of the content analysis phase. Technological tools (otter.ai, MAXQDA) were employed which allowed the research team to tightly adhere to the definitions of the TDF, highlight units of analyses for deliberation and visualize the connections between the data (Figure 6.1).

**Results**

Summary information for the participants who commented on the 14 TDF domains is provided in Table 6.5. During data extraction of the transcripts, it was established that all statements made by the participants could be coded using the TDF. One additional theme of the Covid-19 pandemic emerged during the analysis of the data. It was decided to include this as an additional theme due to the atypical nature of the specific circumstances (i.e. global pandemic) encountered during the investigation. A summary of each of the TDF domains with participant quotations are presented below under the three headings of the COM-B model. The MAXQDA software allowed the research team to create a heat-map of the analysed data, shown in Figure 6.1, which helped to create a visual tool to explore the relationships between the coded sections.
Table 6.5

Statements Made by Participants Corresponding to TDF Domains and COM-B dimensions

<table>
<thead>
<tr>
<th>COM-B Dimension</th>
<th>TDF Domain</th>
<th>No. of participants n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capability</td>
<td>Knowledge</td>
<td>13 (92.9)</td>
</tr>
<tr>
<td></td>
<td>Skills</td>
<td>5 (35.7)</td>
</tr>
<tr>
<td></td>
<td>Belief about capabilities</td>
<td>14 (100)</td>
</tr>
<tr>
<td></td>
<td>Behavioural regulation</td>
<td>2 (14.3)</td>
</tr>
<tr>
<td></td>
<td>Memory, attention and decision processes</td>
<td>4 (28.6)</td>
</tr>
<tr>
<td>Opportunity</td>
<td>Social Influences</td>
<td>14 (100)</td>
</tr>
<tr>
<td></td>
<td>Environmental context and resources</td>
<td>14 (100)</td>
</tr>
<tr>
<td>Motivation Dimension</td>
<td>Capability</td>
<td>(54.3)</td>
</tr>
<tr>
<td></td>
<td>Knowledge</td>
<td>(100)</td>
</tr>
<tr>
<td></td>
<td>Skills</td>
<td>(100)</td>
</tr>
<tr>
<td></td>
<td>Belief about capabilities</td>
<td>(100)</td>
</tr>
<tr>
<td></td>
<td>Behavioural regulation</td>
<td>(100)</td>
</tr>
<tr>
<td></td>
<td>Memory, attention and decision processes</td>
<td>(100)</td>
</tr>
<tr>
<td>Note. Abbreviations: TDF – Theoretical Domain Framework</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 6.1

Theoretical Domain Framework Code Relations Matrix for Participant Data

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>Impact of covid-19</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
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<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beliefs about consequences</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<td>1</td>
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</tr>
<tr>
<td>Goals</td>
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<td>18</td>
<td>18</td>
<td>18</td>
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<td>16</td>
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<tr>
<td>Intentions</td>
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<td>11</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>3</td>
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<tr>
<td>Optimism</td>
<td>2</td>
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<td>12</td>
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<td>12</td>
<td>4</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Social/professional role and identity</td>
<td>5</td>
<td>2</td>
<td>35</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>12</td>
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<td></td>
</tr>
<tr>
<td>Environmental context and resources</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
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</tr>
<tr>
<td>Social influences</td>
<td>5</td>
<td>2</td>
<td>13</td>
<td>5</td>
<td>7</td>
<td>7</td>
<td>4</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Memory, attention &amp; decision processes</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<td>1</td>
<td>1</td>
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</tr>
<tr>
<td>Behavioural regulation</td>
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<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>1</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Belief about capabilities</td>
<td>7</td>
<td>3</td>
<td>6</td>
<td>7</td>
<td>16</td>
<td>16</td>
<td>4</td>
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</tr>
<tr>
<td>Skills</td>
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<td>4</td>
<td>2</td>
<td>2</td>
<td>14</td>
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<td>10</td>
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</tr>
<tr>
<td>Knowledge</td>
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<td>13</td>
<td>1</td>
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<tr>
<td>Beliefs about capabilities</td>
<td>1</td>
<td>3</td>
<td>15</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>14</td>
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</tbody>
</table>

Note. Numbers reflect the co-occurrence frequency of codes in the analysed data.

Capability Dimension

Knowledge
Most participants described improved knowledge resulting from completion of the training programme “I could take something out of each module for each area, if you know what I mean, just if I really got, I found it really good” (P01). Several participants commented on the broad scope of the PBS model, “positive behavioural support stems from having them involved in all aspects of their life from getting up in the morning to going to bed at night” (P10). An awareness that the training was in line with an organisational culture shift towards person-centred practice gave many participants confidence in bringing the learning into their practice.

“it's been eye opening for me in doing the course and that (. ) em It's, it's, it's framing all the bigger picture in how all of these organisation wide practices and policies, and you know, how we go about our business can affect people. And at the end of the day, the job we do is supposed to be person-centered, to support them to live their best life. And if we have organizational structures, policies, or practices that diminish or, or don't allow those to, things to run as smoothly as they should, then it's going to in the end affect the end user, like, you know” (P11)

The main barrier identified by participants was the potential lack of knowledge or skills in other team members, which can result in resistance to change, and poor implementation of PBS practice “if everyone's working off the same page, results are good, you know, that if there's gaps or if there's some people doing it, and some people not, the main person that’s losing out is person supported” (P09). Numerous participants expressed their opinion that the training programme should be mandatory for all staff in the organisation “I definitely think it should be rolled out that it should be some kind of mandatory course to be honest” (P05).

Skills
Participants acknowledged that the skills developed in the training programme were practical and applicable to their work “it gives you the tools on how to bring them back, you know, on how to understand their behaviours and their moods and how it affects the other residents, the other service users in the house and, you know” (P06). Participants also commented on applying these skills teaching approaches with adults with ID “and what their kind of skills that they are able to do and the skills that we would have been working on that she was able to kind of, observe us doing first, and then go and do it” (P03).

Similarly, to the knowledge domain, the primary barrier identified was the lack of dependability in the skill set of the team’s participants worked in “you're trying to teach him a new skill, and then try get everyone in the house on board. And then you know, different shifts and different kind of ways people want to do it, you're kind of, it's kind of a bit of a battle that way, as in, kind of quite confused, and then you're getting frustrated” (P16).

**Belief About Capabilities**

All participants commented in this dimension during their interviews. Several participants felt the training gave them greater confidence in the practices they were engaging in before they completed the programme “some things around that come through the training, I felt that we were already implementing, which is really good, I felt that we actually were for once kind of doing things that were that so what came up in the training saying, actually, we're doing that, we're doing that, and we're doing this and it's, and it's quite embedded, so that that was a good thing” (P14).
Numerous participants reported that they had a greater understanding of what constituted good practice and shared that they would actively engage in procedures and further training to maintain these capacities in the future

“I’m still learning a lot from it. I know we're finished and whatever. But there is bits that I do go back and read over…It gives a whole different insight of it's not just about staff, it's about the lads view and what they'd like. And there's a lot in it” (P05).

However, several of the participants believed that despite their increased belief in their capabilities, the impact of this was limited by the capacities and practice of their colleagues

“I think it depends on the staff involved. Some of them are very proactive in that area, engaged, interested. And then some lesser so some, some it’s just, you know, a tick boxing exercise I’m doing my job, keep the person safe” (P13).

A few participants in leadership roles reported that their capabilities were limited by their weighty workload “it's just a constant of you're on this kind of hamster wheel and you're just turning turning turning so quickly” (P16); “I would say, in the role of the PIC time is something that's really hard to come by, I think the job is quite stretched” (P11). Several participants in frontline roles also believed that while they had developed capacities in PBS, time constraints prevented implementation in practice

“when you're under a lot of pressure and I know I've done it myself, I'm like I don't even give (adult with ID) like the chance to put the teabag in her cup because I'm so I'm so busy that I'm like, oh, I'll just go do it myself “(P16).

**Behavioural Regulation**

Participants noted several enablers for practice change, such as incorporating PBS into pre-existing organisational practices like staff meetings and supervision
“I was focusing on throughout this training, the systemic approach, there are regular reviews with their positive behaviour support plan, just team discussions, you know, at team meetings and things like that, quality conversations, or even just reflective pieces or debriefing pieces after an actual incident” (P01).

Goal setting skills were identified as particularly useful in behavioural regulation

“goal setting, was one of the modules and like you can see how it, it greatly impacts and has a positive impact on people we support by putting all of the positive behaviour supports, resources and material to practice” (P02).

**Memory, attention, and decision processes**

The predominant barrier identified in this domain was the online training delivery format. Staff expressed a preference for face-to-face learning environments and reported that the online approach impacted their focus and capacity to engage with the content “me myself personally found it very hard on (MS)Teams to try and do it. Because I'm more classroom focused. Maybe I'm old school” (P05). Staff also found it challenging to protect the time for online learning, and they often had to attend training during work shifts “and as well as that, obviously, demands of work when you're on an in an online meeting, and you're actually physically in the area, people call on you an awful lot. So it's very hard to keep your focus” (P01). However, some staff found the online approach helpful, as they could access a library of resources in their work setting and engage with recorded sessions during night shifts “it was great that you're able to do it on your own time, because like, when you’re a shift worker, that's not always possible, you know, and they were, they were actually live as such. So it was great to be able to go back on them and have them always there” (P02).

**Opportunity Dimension**
Social Influences

All staff mentioned the significance of social influences on the implementation of setting-wide PBS in the work setting. A dominant theme was the importance of the relationship between staff and the adult with ID, with a general view that stronger relationships resulted in a more engaged and invested team.

“I suppose more in relation to the staffing piece, like a lot of relationship building needs to, you know, happen with staff and the person supported to try and fulfil a meaningful day… you do need to give every staff a chance to build a relationship with the person to have the confidence and the trust to move on to do something that's a little bit out of someone's comfort zone” (P01).

An integrated staff team with a shared value base was also identified as an important enabler.

“And so we can work well together in the sense that we kind of push each other…to, to benefit the ladies we kind of all work together” (P03); “And it's good that everybody's now singing off the same page with it as well. And it's it is much better. So it is and it is good” (P05). Several staff highlighted the importance of supervision and organisational adoption of the model as a significant enabler for implementation.

“given some of the, you know, the complex needs, of the people we support, you know, positive behaviour support is that issue with an awful lot, I think of what's lacking in their lives. So, from nearly every perspective of work, you know, we have the service enhancement team meetings, operations team meetings, you know, and the positive behaviour support informs all of that…you know, the quality of a meaningful aspect of people's lives is dependent on it I think” (P13).
Several staff identified inconsistencies in the values and training of staff within the team as a source of divergence, either due to lack of training, differences in attitudes, or redeployments within the organisation.

“because I've done it, they don't necessarily know what I'm doing in the training. So then they're kind of saying, What are you doing? You know, it makes no sense. But like, I think everyone should maybe have a bit of a knowledge around it kind of thing” (p16);

“It’s frustrating because staff are moved so much like you're building up trust with somebody that it can take months to build up trust” (P17). Finally, some participants in leadership roles expressed that it was challenging to dedicate adequate time to mentorship, which was viewed as an important social influence for practice change “then it's trying to find the time to sit down and actually mentor the staff… time needs to be given to it like d’you know it can't be rushed” (P10).

Environmental Context and Resources

This domain was acknowledged by all participants in their interview responses. Staff resources was the predominant theme among participants, with many of the staff highlighting staff turnover, relocations, and limited staffing ratios as barriers to implementation.

“staff turnover can be huge, because we're such a huge organization…to achieve full capacity, sometimes in staffing can be very hard. But I'd say if you had that in every house, you would see huge possibilities for every person supported in (service provider) d’you know what I mean it would benefit so much” (P03).

“I think the barriers would be kind of the changing of staff coming into houses” (P09) and “There are very few cases where there are sufficient staff to be able to implement all of the programs” (P17). Once more, several participants cited online learning and issues with IT
and
equipment as a barrier to practice change, and suggested a return to face-to-face training and future opportunities for peer learning and mentorship as potential solutions for these obstacles.

“I can imagine in a classroom environment having, you know, people chipping in here and chipping in there and giving examples would have helped people think of a situation in their house that they could apply like that, or, you know, I just, I think it would be, it'd be something that will be excellent to, to roll out again” (P11).

With regards to enablers for practice change, staff noted the systemic element of the PBS model as an essential component for the adoption and assimilation of learning into practice “the culture, and the philosophy of what we do, it (PBS) sits, like so well with mission, vision and values of (service provider). You know, it's trying to put people in the right mindset” (P15); and “If it's not systemic across the whole service, then, you know, you're only hitting, hitting it in spots. I think it has to be systemic to have the effect (.) and the benefit on all the people we support” (P13).

Finally, several participants identified good supervision and mentoring as essential in adopting a PBS informed culture in the setting “it's kind of em mentoring them now to get to a point where they understand that every behaviour has a communication, like, they're doing the behaviour for a reason, that it's not just them, d’you know that kind of way” (P10);

“I think even by the culture you create, as a team leader, you know, those kind of systems are, you know, you embed them across and definitely where I, what I would like to think where I work, you know, so what you what you embed in one house, you it mirrors across, because that's, that's the standard you set yourself… But you know, I'm very lucky to have you know, I have a good manager who supports me, alot, and will discuss things with me” (P14).
Motivation Dimension
Social/Professional role and identity

Several staff noted the importance of role-related elements such as team meetings, effective supervision from managers, reflective practice and performance management as enablers for implementation of the setting-wide PBS model “reflective pieces I find is really good or debriefing sessions, team meetings and reviews” (P01);

“then I think at team meetings staff bring up any concerns that they would have. Em or I think they would like to speak about, and we would also have our quality conversations as well, with (TL) that we could go through as well” (P11).

Staff in management roles described how the model had been incorporated into the roles of senior managers within the organisation

“I think there's a real focus, especially in the in the operations team em because we have kind of founded our service enhancement team, we are called, you know, we have given us a new name, we have set time aside to develop as a team, meaning how are we going to lead out on this culture change” (P12).

The theme of high workload, limited staffing and staff changes emerged again in this domain, with many staff commenting on the demands of their role and the difficulties in implementation because of this “it depends on how many are on the floor, and if everyone is willing to do it, you know, that sort of a way. Like if staff are willing to put their time and effort into it” (P06); “currently, I’m running a race” (P10). Finally, staff noted the importance of staff attitudes to their role, particularly viewing setting-wide PBS as supplementary to expected duties of custodial care, as a barrier to implementation

“I was just sayin about the key worker roles and responsibilities like people that aren’t key workers d’you know, necessarily mightn’t understand but like, everyone has to go for
that training… you need to be looking at the staff, you need to be looking at management, you need to be looking at the environment…it should be open to some more staff, because I think it's hugely beneficial” (P03).

**Optimism**

Many participants shared a constructive view of potential outcomes resulting from the systemic adoption of the PBS model. Several participants believed that the organisational component of the model provided confidence in the adoption of this cultural shift in services “it’s absolutely breath taking. I think (service provider) has come so far within the last year. That I think yes, I think it is important” (P12). Staff believed that a positive attitude to practice change, and documentation of outcomes provided the impetus to maintain this setting-wide PBS culture shift in the future

“So I suppose seeing the difference it makes to people, though, like I've seen the difference it has made to people by just the different, putting in place the different positive behaviour supports. Em, just for instance, having them involved in just their everyday life d’you know skills teaching things like that, like the difference that makes to their moods, their d’you know, just to everything in general, they're much happier in themselves, stuff like that. So I think that that is the main encouragement” (P10)

Furthermore, the shift in expectations for the adults with ID supported in the service was identified by staff as instrumental in reducing restrictive practices

“So I think, definitely, it would benefit from them, for them massively, em, to live just less restrictive life. And, em yes, kind of open more doors for them instead of closing on them, d’you know, in that sense that they're given the opportunity to really, em, try new things and not have the past depict the future for them really”
(P09).


**Intentions**

Staff acknowledged the intention to integrate setting-wide PBS into service documentation procedures for monitoring and review of progress as an important mechanism for implementation.

“There was pieces we were speaking about in the training that kept coming up then for monthly reviews or people's goals and roles and you’re reviewing the goals and roles monthly anyway, as well. So it just keeps it a huge focus, because you can't do one without the other” (P01)

Effective team working and practice leadership emerged as significant in terms of intentions for practice change, as several staff commented on these elements in their feedback.

“And then I suppose it's just now at the minute we're looking to highlight kind of leaders within the team that will ensure that it runs em when I am not there I suppose. And to bring in I suppose just changing up staff teams, you know, that have, have maybe adopted a bad culture. Em And it's just changing up staff within that, that I have a good positive impact on other teams, just as support the team in the change, like d’you know it's a whole change process for them as well” (P10)

**Goals**

Staff observed that goal setting and progress monitoring aided the adoption of the setting-wide PBS model into their practice. Several staff cited the influence of systemic goal setting at the onset of training, and a focus on proactive skills focused goals as instrumental in practice change.

“I find it really interesting find that it's really kind of what's needed. It's great approach to not have people get to the crisis mode. That, if there's things there, and consistency of
people filling out forms and supporting people in the right way, you might never get to the crisis point for that people's support. And so I find that approach being really helpful, I suppose, going forward, seeing as we've changed a lot of our practices that this was very welcoming” (P09)

Other staff reported that embracing setting-wide PBS values allowed them to work with the adult with ID on goals that they may not have thought relevant or achievable before completing the training programme

“So I'm looking forward to seeing how well it’ll all sort of mesh together with what's going on in the new house …but the goal is I'm going in the right direction towards making steps for that goal to be achieved… But it's even more important, because we're encouraging a behaviour that's going to be of benefit to the person down the road” (P17).

This also enabled staff to move away from restrictive goals and think creatively about focusing on quality-of-life goals with the adults with ID they support

“But for me, it is more as a it has something to do with enabling people to live their good lives and positive behavior support falls under that, instead of putting a restriction into place for someone just because the team can't, em, doesn't know how to support the person best would not be the right approach to me” (P12)

**Belief about consequences**

A recognition of the value of positive relationships between staff and adults with ID was noted by many of the participants as essential in the implementation of setting-wide PBS “of course it’s important because it's their it's their home. And…it’s for them, for themselves that you want to support and make life better for them” (P06) and
“Sometimes I find that the best that that comes from very good tuned in team.

Sometimes even if you get in say I suppose, you know if you can capture that from a team who work with who support person every day, and really work at it, it really has very good outcomes for the person” (P14).

Several staff reflected that the belief in setting-wide PBS as a life-long process rather than a quick fix was contributory in adopting this model of intervention

“this is not going to happen overnight. This is not a magic wand. And behaviour support is not about waving a magic wand… behaviour support is rather a process that we, you know, go through in finding ways to support people… So it's not a cookie cutter thing… and the key to that process is your adherence to it and your genuine and honest feedback to it” (P11).

Finally, staff noted a lack of investment in training for staff as a barrier to implementation of the model. While the service provided a range of mandatory training, this was focused mainly on risk reduction and regulatory compliance, rather than quality of supports and skill development in support staff

“I think that's where we are still lacking a little bit in in (service provider), our mandatory training is very much focused on okay with the safeguarding, but it's very much focused on health and safety and nutrition em and medication which is clear, what I think we need to bring in other elements as well” (P12).

Reinforcement

Overall, staff identified the enhancements in quality of life for the adults they support as the main reinforcer for behaviour change “It's like anything isn’t it when you see that it works, it
motivates you to move on more” (P01). The importance of supervision and appraisal was also recognised as significant in encouraging and maintaining setting-wide PBS practices

“I think appraisal of staff. So the importance of appraisal first off when there is a change or they've been doing it for so long or they do a good job. So it's important to actually ahm actually encourage that like by giving them that praise and highlighting that they're really good at behavioural support” (P10).

*Emotion*

While this domain was rarely the subject of participants feedback, several found the training content resonated with them, and was influential in their adoption of setting-wide PBS practices

“The best example was in the video… that was so enlightening. And I would have loved for each of the staff to come in and see that this is the start, it took six months for this reaction to happen. So we also need to be patient, but be consistent. And I would have, I would have given anything just to get... all the staff in and just say, just watch this piece of the training” (p17)

“Like, there was a brilliant… video around the residents’ meetings, I thought, so we did a piece around em easy read guide for residents meetings and how to facilitate them. So that's how I'm trying to kind of build it into it” (P12)

Lastly, staff acknowledged that completion of the training highlighted the breadth of current knowledge and skill set, which they may have been previously unaware of “And I was actually surprised to how much I knew but. There was more learning for me personally, towards the end of all the modules as they went on” (P02).

*Covid-19 Pandemic*
Some 71.4% of participants (n = 10) referred to the impact of the pandemic in their interviews. The impact on the daily plans and goals of the people supported, in terms of staff absences and covid-19 restrictions were noted as barriers to adoption of setting-wide PBS “we had a gentleman in (work setting) who had to go into hospital for now it was only for a day procedure, but was in February was in the middle of a really tough time COVID wise. So it was a really god I felt it was like a, I don't know, a military operation” (P14).

Several staff described the social isolation that some adults with ID experienced, and how the restrictions were a barrier to achieving individualised goals “And he's just, he, like, he found COVID, very difficult and all and not being able to see his family and different things like that” (P02). However, staff were optimistic that work on achievement of these goals would resume when restrictions were lifted “we're hoping to plan a holiday already, like COVID hasn't even ended yet and We're hoping to go on holiday, you know, for the ladies” (P03).

**Discussion**

Innovations for training staff in PBS are now accessible for those intent on progressive systems change in service provision (Dunlap et al., 2000; Freeman et al., 2005; Reid et al., 2003). Implementation science provides a means of investigating the processes involved in changing the behaviour of large bodies of staff so that efforts for system change may be evidence-based (Michie et al., 2005). The aim of this qualitative study was to employ an empirical behavioural change paradigm, the COM-B model of behaviour (Michie et al., 2011), to an investigation of the factors impacting the adoption of setting-wide PBS in an adult disability service that had completed a setting-wide PBS workforce development programme. Outcomes will be discussed in terms of the key enablers and barriers identified
by staff participants across
the COM-B domains, as well as consideration of future interventions that may be valuable in enhancing the ongoing implementation of this model of practice in the setting.

**Capabilities dimension**

Service personnel reported confidence in their understanding of the value base and concepts of setting-wide PBS following training. Significant developments have been made over the past twenty years in establishing quality frameworks for staff training in PBS (Dench, 2005; McClean et al., 2005), and more recently setting-wide PBS (Allen et al., 2008; Tomlinson et al., 2017). Less is known about effective ways to secure investment in the further development and maintenance of these capacities. Staff training requires considerable funding by commissioners that are often working with very limited budgets and resources. A recent review of state spending on disability services by the Department of Health in Ireland (Department of Health, 2021) indicated that the current annual budget of €2.2 billion was insufficient, and that significant increases in investment in service provision is required over the next 10 years. This lack of investment is reflected in the current study outcomes, as the primary barrier identified by participants in terms of their capabilities, was the variability in the skills of their colleagues.

Competencies of DSP are frequently cited in the literature as a barrier to quality service provision (Dench, 2005; Hunter et al., 2020; van Oorsouw et al., 2013). Services often focus their limited training budgets on rudimentary and generic mandatory training for DSP in order to comply with national standards and regulations, such as HIQA regulation 7 on positive behaviour support (Health Information and Quality Authority [HIQA], 2021). However, these standards are often very general and abstract, and open to quite broad interpretation by service providers (McEwen et al., 2021). Furthermore, assessment of compliance in this area often focuses more on service policy and procedure rather than
evidence-based outcomes in terms of
the lived experience of the people supported by these services (McEwen et al., 2014; Murphy & Bantry-White, 2020).

The method of training was identified by several participants as a barrier to practice change. Due to Covid-19 public health restrictions, all university research involving direct contact with human participants ceased due to the impact of the pandemic. This was further complicated by Covid-19 visitation restrictions in service settings, which also indicated that any staff training programmes must take place remotely. While computer-based coaching and mentoring sessions were available as part of the setting-wide PBS workforce development programme, these were often not accessed, and may be considered a poor substitute to in-person evidence-based methods of skill development, such as behavioural skills teaching (Belisle et al., 2016; Gormley, Healy, O'Sullivan, et al., 2019; Sarokoff & Sturmey, 2004). Several staff cited deficits in IT skills as a barrier, in their engagement with training, as a challenge to their current capacities, and in their access to appropriate IT equipment. There was a prevalent belief that staff were expected to complete online training during normal working hours, often in the residential setting where they were based. The alternative to this was completing the training during personal time while accruing time in lieu. While provisions are in place when planning staffing levels to allow for continuous professional development, these are not always realised in practice due to absenteeism, redeployments, and limited budgets (Bern-Klug et al., 2021; Meagher et al., 2009). It has also been demonstrated that attitudes and responses to planned online learning and emergency online learning can diverge, with more positive outcomes resulting from planned online instruction (Hodges et al., 2020). As the conversion of the workforce development programme to a remote learning format was responsive to the pandemic restrictions, further investigation of planned remote training delivery is warranted. While there are also some
promising developments in using online methodologies for evidence-based skill development (Carnett et al., 2021), considerable investment in the development of quality training materials and equipment, and in the formulation of staffing ratios, is required to safeguard the quality and efficacy of future capacity development programmes. This is an important area for future research in disability service provision.

**Opportunities Dimension**

The significance of relationships between staff and adults with ID emerged as an important theme in the opportunities dimension of the COM-B model. There is considerable evidence of positive outcomes when staff are expected to change how they relate to the people they support as an outcome of training (Hastings, 2005; Hollins & Steckley, 2020; Totsika et al., 2011). Griffith and colleagues (2013) in their thematic syntheses of the experiences of people with ID and challenging behaviour reported that positive and respectful relationships with staff was found to be one of the constructive elements of residential services. Frequently people with ID consider DSP as friends, as they have limited opportunities to create and maintain friendships with their peers (Fulford & Cobigo, 2018). The relational aspect of care, such as emotional support and assistance in decision making may be more important to some people with ID than independent living skills (Mik-Meyer, 2016). The role of DSP in supporting people with ID to develop and maintain interpersonal relationships is also significant (Robinson et al., 2020).

Quality of relationships between adults with ID and DSP is sometimes a concern that is avoided when it comes to planning and implementing quality disability services, and more specifically setting-wide PBS within these services (Reynolds & Walmsley, 1998). For instance, this specific dynamic is not cited within the key components of PBS described by Carr and colleagues (2002), or in the core principles of setting-wide PBS outlined by Sugai
and Horner (2009). There is
however an acknowledgement of staff-service user relationship in the core PBS competencies for frontline staff outlined by the PBS Academy (2015), specifically in the areas of “knowing the person” and “supporting relationships with friends, family and community”. These relationships were especially significant at the time of the study due to the Covid-19 restrictions on family visits to supported living settings. High staff turnover, redeployments of staff within services and poor staffing levels are frequently cited as problem areas in disability service provision (Gomes & McVilly, 2019; Mansell & Beadle-Brown, 2009; Qian et al., 2019), and are detrimental to relationships between staff and people with ID (Friedman & Rizzolo, 2018). Future research in the principles and values of setting-wide PBS needs to consider where relationships between DSP and the people they support fits in the current conceptual framework.

Mentorship and supervision featured as important agents in the opportunity dimension for behaviour change among staff participants. Previous studies have recognised the role of team leaders as a key component in the quality of support provided by staff (Deveau & McGill, 2014; Hume et al., 2021; Larson & Hewitt, 2005). In an environment of high turnover, changing teams and lone working, it is crucial that first line managers are supported to provide regular skillful mentorship and supervision to their subordinates. Despite this, many DSP experience a dearth of direct supervision and mentorship (Friedman, 2018), which is concerning as service providers are often reliant on an on-the-job or ‘trial and error’ approach to capacity development for new recruits (Erath et al., 2020; Reed & Henley, 2015; Windley & Chapman, 2010). Furthermore, new staff can absorb enduring team cultures from their observation of established staff member practices, which may not align with aspired culture change (Windley & Chapman, 2010). Effective leadership is a protective factor in staff retention (Moriarty et al., 2018; Power &
Burke, 2021), but research into what makes an effective leader is limited. It is disquieting that
study participants in front-line management roles all cited high workload and time pressure as a barrier to behaviour change in their responses, which is reflected in the literature (Orellana et al., 2017). There are some promising studies evidencing the importance of practice leadership in supporting organisations and staff to provide high quality support for social and meaningful activity engagement with people with ID (Beadle-Brown et al., 2016; Bigby et al., 2020; Bould et al., 2016). Practice leadership is described as the development and maintenance of high-quality staff support through several distinct and measurable factors that can be specifically trained in front line managers (Beadle-Brown et al., 2014; Osgood, 2022). This is an enduring need in service provision and requires consideration if investment in workforce development programmes is going to result in sustainable behaviour change in DSP, and positive outcomes in the lives of vulnerable adults.

**Motivation dimension**

Participants identified that the integration of setting-wide PBS into existing organisational policies, procedures, and data systems as an important factor in motivating culture change within the system. Specifically, the revision of the organisations policy on restrictive practice was described. It is important to consider that this adjustment was likely motivated by compliance with national standards as well as the implementation of the setting-wide PBS model in the setting, with the publication of the HIQA restrictive practice quality improvement plan (Health Information and Quality Authority [HIQA], 2019). The view and adoption of PBS, and setting-wide PBS, may be disadvantaged by the fact that the model is explicitly referenced in the Health Act 2007 in the context of reducing restrictive practices (Regulation 7), perpetuating the concept of PBS among organisational managers as a reactive response or treatment for distressed
behaviours. Setting-wide PBS needs to be mirrored across all organisational policies, not just policies on restrictive practices, for it to be integrated into practice on a cultural level.

Regarding data systems, participants identified specific and measurable goal setting as an effective motivator for behaviour change in staff teams. LaVigna et al. (1994) periodic service review is well evidenced as an effective tool for progress monitoring (Doody, 2009; McClean et al., 2007; McGill et al., 2018). Effective data systems for capturing service user outcomes are less substantiated. Almost all participants described positive outcomes in the lives of the people they support as an important motivator for behaviour change. Schalock et al. (2018) propose the use of assessed QOL scores for people in receipt of services, for organisational and systems-level monitoring and reporting, quality improvement and research purposes. They describe how QOL scores may be employed at a micro (individual/residential setting), meso (organisational) and macro (state and larger) level, paralleling the setting-wide PBS three-tiered model of intervention. This approach could provide an important development, beyond data collection on use of restraint and incident reporting, to quantitatively measure the impact of systems change in social care services and provide the much-needed impetus for leaders to fund systemic interventions focused on quality of life for people supported.

Participants identified role ambiguity, workload, and unpredictability in current and future team dynamics as barriers to their motivation for practice change. Role issues such as role ambiguity and conflict have frequently been cited as significant factors in work related stress experienced by staff (Devereux et al., 2009; Ryan et al., 2021; Smyth et al., 2015). The majority of DSP are employed as health care assistants, which has been described as a ‘high effort low reward’ position in disability organisations (Czuba et al., 2019; Lee et al., 2009). This may explain why some staff struggle with moving from a custodial care or
paternalistic model to a
skilled, strengths-based model of support such as setting-wide PBS (Sheerin et al., 2015). Role ambiguity and high levels of burden jeopardise sustainability of quality services, and cause significant staffing issues due high absenteeism, turnover, and intention to resign (van der Meer et al., 2017). Evidenced protective factors such as reciprocity in relationships with people supported, colleagues and management (Stevens et al., 2021; Thomas & Rose, 2010), learning effective coping strategies, increased flexibility in the workplace (Rhee et al., 2020), effective appraisal and supervision systems and role clarity (Devereux et al., 2009) deserve thoughtful consideration by funders and service leaders if quality outcomes are to be realised for service recipients.

It is interesting to note that none of the participants identified difficulties with managing distressed behaviours and challenging contexts as a barrier to practice change. There is ample evidence associating exposure to distressed or challenging behaviours and workplace violence, with staff stress and burnout in the published literature, and it has been recognised globally as a rising problem (Allen et al., 1997; Campbell, 2010; Hastings et al., 2018; Smith et al., 2017). An Irish investigation by Keogh and Byrne (2017) reported that over 90% of social care workers employed in residential disability services experienced violence at work, and that under-reporting of violence is a significant concern. The possible motives for this under-reporting may be lack of time, lack of support, reliance on subjectivity, incidents being classified as minor, reporting perceived as a fool’s errand and fear of ramifications (Lovell & Skellern, 2013). It is unclear which, if any, of these factors arose in this instance, but may be a potential area for further study.

Limitations
The current study may be considered to have a number of limitations. Firstly, the participant group predominantly comprised of staff in direct support roles (n=10) and a smaller cohort in middle management positions (n=4). For organisations to fully adopt setting-wide PBS, it is crucial that staff at the most senior level of management such as service leaders, also share their insights to ensure the value of any service development schemes that may come from the outputs of the investigation. Secondly, the definition of setting-wide PBS is extensive, to incorporate all the necessary elements of systems change within the value structure of the model. The COM-B model was originally developed to evaluate very specific behaviour change, and its suitability for more comprehensive perceptions of behaviour change is undetermined. Process evaluation of complex interventions provide an another or perhaps complementary approach to examining implementation for future enhancements (Grant et al., 2013; Oakley et al., 2006). However, the COM-B model and the theoretical domain framework represent a broad spectrum of behaviour change paradigms, and this qualitative study, following the previous quantitative investigation and process evaluation of setting-wide PBS described in Chapters 4 and 5, provides a mixed methods approach to understanding the complex intervention (Petticrew et al., 2013). A third limitation is the relationship of the lead researcher to the participants of the study. As the researcher was also an employee of the organization, and designed and delivered the setting-wide PBS workforce development programme, there is a risk of bias both in terms of the interpretation of the results, and possible influence with regards to the responses of the participants in the study. For example, participants may have been reluctant to be critical of the workforce development programme itself (Komil-Burley, 2021). However, insider action research, where employees of establishments examine organisational systems to change them, has become recognised as an important way of
investigating and changing systems (Coghlan et al., 2019;
Heslop et al., 2018; Holian & Coghlan, 2013). Qualitative researchers have acknowledged that the investigator unavoidably influences the research process and the generated knowledge from this approach, that this is a benefit rather than a limitation of the qualitative method (Braun & Clarke, 2013). A decision was made to adhere to quality criteria for qualitative studies (Elo et al., 2014) rather than seek to apply quality standards for quantitative studies, an error that many novice qualitative researchers can make (Yardley, 2017). With respect to the preparation phase in this checklist, specifically the self-awareness item, it must be conceded that while the lead author had ample experience working in the field of intellectual disability, they were less experienced in qualitative research, which may have impacted the integrity of the investigation. The author however completed this research as part of their doctoral programme and was under the supervision of a highly experienced academic mentor. The research assistant also had completed multiple qualitative studies as an undergraduate and post-graduate student. With respect to the trustworthiness of the analysis, the research team ensured adherence to the defined codes provided by the theoretical domain framework through collaborative consensus building.

Generalisability of the findings may be questioned as the participants of the study were a self-selecting group, and their views may not be shared by participants who declined to take part in the study. Nevertheless, the use of the COM-B framework with this cohort provided a useful means for the host organization to identify enablers and barriers to implementation in this specific setting. Including this quality assurance element into a general setting-wide PBS implementation pathway allows for replication and generalisation, in the provision of a systematic tool to assess implementation concerns as part of the PBS process. Finally, future inclusive research exploring implementation of PBS with and by adults with ID, though procedurally and ethically challenging, is crucial if PBS is truly a
person-centered rights-based
paradigm. Methodological advances such as the use of visuals or “photovoice” (Heffron et al., 2018; Milner & Frawley, 2018) provide innovative means to embark on this valuable sphere of research.

**Conclusions**

Systemic concerns with DSP wellbeing, retention and capacity development continue to be prevalent in disability service provision. Challenging behaviour is the most evidenced factor related to staff wellbeing within the intellectual disability sector (Ryan et al., 2021). It is reasonable to propose that systemic adoption of evidence-based systems of support to reduce distressed behaviours are required to address this issue. The present study shares similar findings with other research in staff perceptions of training programmes designed to transform practice (MacDonald & McGill, 2013; McKenzie et al., 2020; Windley & Chapman, 2010). Outcomes indicate a need for significant investment in widespread, mandatory evidence-based training programmes in quality of support for DSP, first line managers and service leaders. Similar approaches have been evidenced in the US (Freeman et al., 2005; Reid et al., 2003) and are developing in the UK, with alliances between state healthcare services and universities emerging as a means of realizing this objective (McKenzie, McNall, et al., 2021). Quality of life measures may provide the much-needed evidence base at all system levels to effect meaningful change.

Funding commissioners need to look beyond reactive models of support and focus on demonstrated and sustainable models of service provision and workforce development to achieve tangible outcomes for the most vulnerable in our society.
Chapter 7

Implementation Roadmap for Setting-Wide PBS in Adult Disability Settings
Several healthcare initiatives have invited applied researchers to investigate service delivery procedures and contextual influences to advance the efficacy and productivity of system implementation across multiple levels (Bertram et al., 2015; Fixsen et al., 2005). An often-overlooked challenge is that the complexities of implementation can far outweigh the intricacies of the specific innovations being put into place (Hull et al., 2019; Olswang & Prelock, 2015; Skouteris, 2021). It is important to regard implementation as a process rather than a single event (Fixsen et al., 2005). Utilising the findings from the current research programme, this chapter will explore a conceptual framework for implementation and how it may be applied in the development of an implementation roadmap for setting-wide PBS in adult disability settings.

Fixsen and colleagues (2005) described the theory to practice gap eloquently when they wrote that shelves full of intervention manuals do not necessarily translate to innovative practice or change in human service systems. A large proportion of long-term changes in healthcare communities fail (Bernstein et al., 2016; Dearing & Cox, 2018), which is often related to implementation barriers rather than ineffective programmes (Bauer & Kirchner, 2020; Olswang & Prelock, 2015). The process evaluation detailed in Chapter 5 and qualitative examination of outcomes described in Chapter 6 clearly reflects that a range of implementation barriers were encountered in the present exploration of introducing setting-wide PBS in an adult disability setting. Empirical developments focused on bridging theory to practice have fostered appreciation of the position of implementation science as a conceptual and methodological tool (Hull et al., 2019). There are more than 150 theories, frameworks and models (or TMFs) in the implementation literature (Strifler et al., 2018) and the selection of an appropriate paradigm is difficult. In their synthesis of implementation research, Fixsen et al. (2005) noted four essential elements of successful execution of a
programme: a) carefully chosen skilled purveyors; b)
effective organisational support; c) involvement of communities and consumers at all stages, and
d) adequate funding structures. The authors applied these findings in the development of a conceptual framework. The application of this conceptual framework to setting-wide PBS in adult settings is summarised in Figure 7.1.

**Figure 7.1**

*Conceptual Framework for Implementation of Setting-Wide PBS in Adult Settings*

![Conceptual Framework Image](image)

*Note: Adapted from Fixsen et al. (2005)*

In this paradigm, source refers to the model of setting-wide PBS as described in Chapter

1. The destination, which refers to the individual practitioners and the organisation that adopts the innovation, may include various types of adult disability service such as supported living settings. The communication link, or purveyors, refers to an individual or group or individuals, skilled and focused on implementing the programme with fidelity and effectiveness (Fixsen et al., 2005). Practitioners with expertise in PBS such as behavioural psychologists, or those with professional training and experience in systemic models of PBS could fulfill this role (Martin, 2015). As described in Chapter 2, there is a dearth of accredited academic PBS training programmes available in Ireland (Martin, 2015), but there are promising developments in this area in the UK (Leitch, Jones, & MacDonald,
Partnerships between academic institutions and state disability agencies such as the National Federation of
Voluntary Bodies or the National Disability Authority could be explored to develop appropriate programmes to ensure that adequately skilled change agents are available.

Purveyors (setting-wide PBS practitioners) have the opportunity of gaining knowledge and experience in implementation of evidence-based practices such as setting-wide PBS over time (Fixsen & Blase, 1993; Schofield, 2004; Winter & Szulanski, 2001). In Ireland, clinical services for adults with disability are usually provided through the Health Service Executive (HSE) Community Disability teams. Inclusion of setting-wide PBS professionals in community teams could potentially build a network of experience and skill in the implementation of complex systemic intervention within these teams, while potentially reducing the load of individual referrals.

**The Setting-Wide PBS Implementation Roadmap**

Fixsen et al. (2005) in their synthesis of implementation research identified specific stages in effective implementation processes which are presented in Figure 7.2. The following section will adopt these stages to outline an implementation roadmap for setting-wide PBS in adult disability settings.

**Figure 7.2**

*Stages of the Implementation Process*

[Diagram showing the stages of implementation process]

*Stage 1: Exploration and Adoption*
The aim of exploration is to evaluate the fit between an organisation’s needs, relevant evidence-based practices and contextual resources for decision making (Lawson & Samson, 2001; Weintraub & McKee, 2019). PBS, described in Chapter 1, is mandated in Ireland under the Health Act as an evidence-based practice for vulnerable adults living in residential settings, so there is a responsibility for service providers to direct appropriate resources to the provision of this person-centred approach. In the RCT described in Chapter 4, organisational buy-in was challenged by the cessation of the setting-wide PBS working group early in the implementation. Commitment of leadership to the implementation process is described as a key ingredient for organisational change, however, effective ways to secure this cooperation remains under researched (Bertram et al., 2015; Fixsen et al., 2005). Organisational readiness for change (ORC) has been identified as a crucial antecedent for organisational commitment to implementation (Lehman et al., 2002; Weiner et al., 2008). This construct has been defined as “the extent to which organisational members are psychologically and behaviourally prepared to implement organisational change” (Weiner et al., 2008, p. 381). ORC measures provide a useful means of reviewing the position of a service with respect to enablers and barriers to evolution. There are a multitude of available instruments in the literature focused on various aspects of readiness (Blackman et al., 2013; Helfrich et al., 2009; Weiner et al., 2008). The Organisational Readiness for Implementing Change (ORIC) is a brief, reliable and valid measure developed for this purpose (Shea et al., 2014) and is the first recommended task in this potential roadmap for implementation. While generating ORC is challenging, numerous determinants in a theory of organisational readiness for change have been identified (Weiner, 2008). This is useful should the ORIC assessment reflect low or absent inclination in the organisation to evolve. Second, the establishment of an implementation task force
consisting of key stakeholders in the organisation
such as adults with ID and their advocates, Chief Executive Officer, senior management, direct support professionals, clinical staff and administrative personnel is crucial to encourage and sustain commitment and ownership (Bachman & Duckworth, 2003; Griffiths et al., 2007; Schalock et al., 2018).

Stage 2: Programme Installation

At this point, resources are focused on active preparation for adoption of the principles of the agreed evidence-based practice, or in this case, setting-wide PBS. These may include funding applications to commissioners, human resource strategies, policy development and/or revisions, referral systems and outcome expectancies (Bertram et al., 2015; Fixsen & Blase, 1993; Fixsen et al., 2005). Recent investigations into cost-of-service provision for adults with ID indicate quality supports that includes important elements of setting-wide PBS such as engagement in meaningful activities do not cost more (Beadle-Brown et al., 2021), and it is possible to enhance services with existing resources. However, this requires DSP that have the capacity, opportunity and motivation to acquire the range of complex skills necessary to implement effective interventions (Campbell, 2010). The commissioning of standardised setting-wide PBS workforce development programmes in partnership with academic institutions and government departments such as the Department for Children, Equality, Disability, Integration and Youth in Ireland has the potential to provide a means for cost effective programme installation across disability service providers in the state. Other related costs such as equipment (webcams, computers etc.), appropriate skill development spaces outside of residential settings and funding time for staff while they are engaged in training should be included, reviewed, and adhered to in yearly budgets as they are a necessary outlay in the provision of quality services.

Stage 3: Initial Implementation
Perhaps evolution is a more fitting description of the initial implementation of a programme, as change does not occur uniformly in all parts of an intervention or an organisation (Waddell et al., 2019). In Chapter 5, the challenges of the initial implementation of setting-wide PBS are described in detail. Resistance to change, inertia and adherence to familiar “this is how we do things here” routines mingled with the difficulty with implementing something different and unfamiliar is well evidenced in the literature (Ersek et al., 2012; Mulhall et al., 2018; Sarre et al., 2018; Van Ness et al., 2012). Generating awareness in organisations that initial implementations are problematic may be an essential protection from disappointment or drift following problematic initial trials. The inclusion of feedback systems from the onset where consumers and implementers are committed to examining barriers and enablers to change is an essential ingredient for sustainable interventions. It is essential that quality data on implementation fidelity and outcome measures of impact are used so that implementation can be refined. The COM-B framework adopted in Chapter 6 was demonstrated as an effective validated tool to provide useful feedback from DSP and management teams. An adaption of this tool to collect central feedback from adults with ID on their experience of the implementation is an important area for future research. Several outcome measures with respect to impact of the programme are described in Chapter 4 (see Table 4.4). A Tier 1 Benchmarks of Quality assessment has been developed for school settings (Kincaid et al., 2021) but is not appropriate to use with adult populations. Accordingly, an adapted version of the instrument for adult disability settings that may provide an important tool for quality evaluation is provided in Table 7.1. A related scoring form is available in supplementary materials. Finally, a summary of useful implementation and intervention measures for setting-wide PBS are summarised in Table 7.2.
### Table 7.1

*Tier 1 Benchmarks of Quality for Adult Disability Settings (adapted from Kincaid et al., 2021)*

<table>
<thead>
<tr>
<th>Feature</th>
<th>Possible Data Source</th>
<th>Scoring Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Critical element: Setting-wide PBS Team</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Team has senior management team (SMT) support</td>
<td>Meeting agendas, minutes, and materials Tier 1 action plans Organisational improvement plan</td>
<td>0 = SMT do not actively support the PBIS process 1 – SMT support the process but are less active and attend less than 50% of meetings 2 – SMT support the process, take an equally active role as other team members and attend at least 75% of meetings 3 – SMT attended training, play an active role in the PBS process, actively communicate their commitment, support the decisions of the PBS team and attend more than 75% of team meetings</td>
</tr>
<tr>
<td>2. Team has regular meetings (at least monthly)</td>
<td>Meeting agendas, minutes and materials Tier 1 action plans</td>
<td>0 = Team seldom meetings (fewer than 5 monthly meetings during the calendar year) 1 = Team meetings are not consistent (5 – 8 monthly meetings in the calendar year) 2 = Team meets monthly (minimum of 11 one hour meetings each calendar year)</td>
</tr>
<tr>
<td>3. Team has established a clear mission/purpose</td>
<td>Mission statement on website, meeting agendas, staff handbook etc. Tier 1 action plan</td>
<td>0 = No mission statement written for the team 1 = Team has a written mission statement for the PBS team (usually completed on the cover sheet of the action plan).</td>
</tr>
<tr>
<td><strong>Critical Element: Organisational commitment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Staff are aware of PBS related outcomes (e.g. quality of life, episodes of distressed behaviour, restrictive practices) across the organization through regular data sharing</td>
<td>Meeting agendas, minutes and materials Tier 1 walkthrough Staff surveys and interviews Communication with staff (e.g. emails, newsletters, notice boards)</td>
<td>0 = Data are not regularly shared with the staff body (less than twice a year) 1 = Data regarding setting-wide PBS outcomes are occasionally shared with staff (3-9 times a year) 2 = Data regarding setting-wide PBS are shared with staff monthly (minimum of 10 times a year)</td>
</tr>
</tbody>
</table>
### Chapter 7

<table>
<thead>
<tr>
<th>5. Staff body are involved in establishing and reviewing goals</th>
<th>Meeting agendas, minutes and materials</th>
<th>0 = Wider staff body does not participate in establishing setting-wide PBS goals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Communication with staff (e.g. emails, newsletters, notice boards)</td>
<td>1 = Some of the wider staff body participate in establishing setting-wide PBS goals on at least an annual basis</td>
</tr>
<tr>
<td></td>
<td>Staff surveys/interviews</td>
<td>2 = Most of the wider staff body participate in establishing setting-wide PBS goals on at least an annual basis</td>
</tr>
<tr>
<td></td>
<td>Tier 1 action plans</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6. Staff feedback is obtained throughout the year</th>
<th>Surveys, voting, emails or suggestion boxes</th>
<th>0 = Staff body are rarely given the opportunity to participate in the setting-wide PBS process (fewer than 2 times in a calendar year)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Meeting agendas, minutes and materials</td>
<td>1 = Staff are given some opportunities to provide responses, to offer ideas, and to make some choices during the setting-wide PBS process. However, the team also make decisions without impact from the wider staff cohort.</td>
</tr>
<tr>
<td></td>
<td>Tier 1 action plans</td>
<td>2 = Staff body are given opportunities to provide responses, to offer ideas and to make choices in every step of the setting-wide PBS process (e.g. surveys, polls etc). Nothing is implemented without majority approval</td>
</tr>
</tbody>
</table>

#### Critical Element: Ethical Procedures for Responding Safely to Distress

<table>
<thead>
<tr>
<th>7. Safe, ethical responses to distressed behaviour are described in narrative format or accessible format</th>
<th>Staff handbook</th>
<th>0 = Team has not established clear written procedures for responding to distressed behaviours and/or there is no differentiation between high/low risk incidents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Supported person handbook</td>
<td>1 = Team has established clear, written procedures that outline the process for ethically and safely responding to high/low risk incidents of distress (does not include crisis situations)</td>
</tr>
<tr>
<td></td>
<td>Organisational policies</td>
<td>2 = Team has established clear, written procedures that outline the process for ethically and safely responding to high/low risk incidents of distress (includes crisis situations)</td>
</tr>
<tr>
<td></td>
<td>Flow charts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Casual staff quick reference guidelines</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8. Responsive procedures includes documentation process</th>
<th>Staff handbook</th>
<th>0 = There is not a documentation process to track high/low risk incidents of distress (i.e. form, database entry, file etc)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Supported person handbook</td>
<td>1 = There is a documentation process to track both high/low risk behaviour incidents (i.e. forms, database, file etc.)</td>
</tr>
<tr>
<td></td>
<td>Incident recording forms</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tracking system/database</td>
<td></td>
</tr>
</tbody>
</table>
| 9. Incident recording form includes information useful in decision making | Staff handbook | 0 = The incident form lacks one or more of the essential fields or does not exist  
1 = The incident form includes all of the essential fields, but also includes redundant information that is not used to make decisions and may cause misunderstanding  
2 = Information in the incident form includes all of the essential fields: Persons unique identifier number, date, time of incident, setting/unit, staff member, location of incident, gender, description of distressed behaviour(s), possible motivation/function, others involved, management decision/response |
| Supported person handbook |
| Incident recording forms |

| 10. Distressed behaviours clearly are defined | Staff handbook | 0 = No written documentation of definitions are in place  
1 = Not all behaviours are described or some definitions are unclear  
2 = All of behaviours are described but some of the definitions are unclear  
3 = Written documentation is in place that includes clear descriptions of all potential distressed behaviours |
| Supported person handbook |
| Training materials include examples |

| 11. High/low risk distressed behaviours are clearly differentiated | Staff handbook | 0 = Specific high/low risk distressed behaviours are not clearly described, discerned or recorded  
1 = Some staff are unclear about which distressed behaviours are managed by the direct support team and which require referral for further support (i.e. appropriate use of referrals) or no documentation exists  
2 = Most staff are clear about which distressed behaviours are managed by the direct support team and which require referral for further support. These behaviours are clearly described, discerned and documented. |
| Supported person handbook |
| Training materials include examples |
| Staff/supported person survey |
| SMT Interviews |

| 12. Suggested array of safe ethical responses to high risk distressed behaviours | Staff handbook | 0 = There is evidence that some SMT/team leaders are not aware of, or do not observe an array of pre-determined appropriate responses to high risk incidents of distressed behaviours  
1 = There is evidence that all SMT/team leaders are conscious of and use a selection of predetermined safe and ethical responses to high risk episodes of distressed behaviours |
| Supported person handbook |
| High risk incident recording form |
| Outcome measure (e.g. restrictive practices) |

**Critical Element: Data Entry & Analysis Plan Established**
13. **Data system is used to collect and analyse data from outcome measures**

<table>
<thead>
<tr>
<th>Staff handbook</th>
<th>0 = The data system cannot provide any of the necessary information the team needs to make setting-wide decisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supported person handbook</td>
<td>1 = Only partial information can be attained (lacking either the number of incidents per day per month, by location, distressed behaviour, time of day, person supported, and evaluated between years)</td>
</tr>
<tr>
<td>High risk incident recording form</td>
<td>2 = All of the information can be attained from the database (e.g. average number of incidents per day per month, by location, by distressed behaviour, by time of day, by person supported, and evaluated between years), though it may not be in graph form, may require additional resources to gather relevant information or require staff time to understand the data</td>
</tr>
<tr>
<td>Other outcomes measure data (e.g. quality of life, restrictive practices)</td>
<td>3 = The database can quickly output data in graph format and allows the team access to all of the following information: average incidents per day per month, by location, by distressed behaviour, by time of day, by person supported and compare between years</td>
</tr>
</tbody>
</table>

14. **Additional data are collected (staff turnover, engagement in meaningful activity, practice leadership, social validity) and used by the setting-wide PBS team**

| Meeting agendas, minutes and materials | 0 = The team does not collect or contemplate data other than incident reports to help determine improvement (e.g. staff satisfaction surveys, social validity, engagement in meaningful activities) |
| Tier 1 action plans | 1 = The team collects and contemplates data other than incident reports to help determine improvement (e.g. staff satisfaction surveys, social validity, engagement in meaningful activities) |
| Data presentations and displays (e.g. data summaries, emails to staff, presentations, handouts) | 2 = Data are printed, evaluated and put into graph form or another accessible format by a team member less than once a month |
| Tier 1 action plans | 3 = Data are printed, evaluated and put into graph form or another accessible format by a team member monthly (minimum) |

15. **Data evaluated by the setting-wide PBS team at least monthly**

| Meeting agendas, minutes and materials | 0 = Data are not evaluated |
| Data presentations and displays (e.g. data summaries, emails to staff, presentations, handouts) | 1 = Data are printed, evaluated and put into graph form or another accessible format by a team member less than once a month |
| Tier 1 action plans | 2 = Data are printed, evaluated and put into graph form or another accessible format by a team member monthly (minimum) |

16. **Data shared with the team and SMT/staff body monthly (minimum)**

| Meeting agendas, minutes and materials | 0 = Data are not reviewed each month by the PBS team and shared with the SMT/staff body |
| Action plans | 1 = Data are shared with the PBS team and SMT/staff body less than one time a month |
| Communication with staff (e.g. email, newsletters, notice boards) | 2 = Data are shared with the PBS team and SMT/staff body at least once a month |
### Critical Element: Expectations and Systems Developed

| 17. 3 – 5 positively stated organization wide expectations are displayed around the setting | Tier 1 walkthrough  | 0 = Expectations are not displayed, or team has either too few or too many expectations  
1 = 3-5 positively stated expectations/values are not clearly exhibited across organizational settings  
2 = 3-5 positively stated expectations/values are clearly displayed in main areas (offices, day services, residential settings) inconsistently  
3 = 3-5 positively stated expectations/values are clearly displayed in main areas (offices, day services, residential settings) consistently |
| --- | --- | --- |
| Tier 1 walkthrough  | Signage/advertisement of values and expectations across the setting  | 0 = Expectations are not displayed, or team has either too few or too many expectations  
1 = 3-5 positively stated expectations/values are not clearly exhibited across organizational settings  
2 = 3-5 positively stated expectations/values are clearly displayed in main areas (offices, day services, residential settings) inconsistently  
3 = 3-5 positively stated expectations/values are clearly displayed in main areas (offices, day services, residential settings) consistently |
| 18. Expectations/values apply to staff and supported adults | Tier 1 walkthrough or staff/supported person interviews  | 0 = There are no expectations  
1 = Expectations refer only to supported adults  
2 = Setting-wide PBS team has expectations that apply to all persons supported and all staff but haven’t specifically communicated that they apply to staff also  
3 = Setting-wide PBS team has communicated that expectations apply to all staff and all supported adults |
| | Signage of values/expectations across organizational settings  | 0 = There are no expectations  
1 = Expectations refer only to supported adults  
2 = Setting-wide PBS team has expectations that apply to all persons supported and all staff but haven’t specifically communicated that they apply to staff also  
3 = Setting-wide PBS team has communicated that expectations apply to all staff and all supported adults |
| | Staff and supported person handbooks e.g. setting-wide matrix  | 0 = There are no expectations  
1 = Expectations refer only to supported adults  
2 = Setting-wide PBS team has expectations that apply to all persons supported and all staff but haven’t specifically communicated that they apply to staff also  
3 = Setting-wide PBS team has communicated that expectations apply to all staff and all supported adults |
| | Professional development materials  | 0 = There are no expectations  
1 = Expectations refer only to supported adults  
2 = Setting-wide PBS team has expectations that apply to all persons supported and all staff but haven’t specifically communicated that they apply to staff also  
3 = Setting-wide PBS team has communicated that expectations apply to all staff and all supported adults |
| 19. Codes of conduct are developed and displayed for specific settings (e.g. setting where data suggest guidelines are needed) | Tier 1 walkthrough  | 0 = Codes are not displayed in any of the key (problematic) areas of the organization  
1 = Codes are displayed in some, but not all the key areas of the organization  
2 = Codes are displayed in all the key areas in the setting |
| | Signage of expectations in key areas across organizational settings  | 0 = Codes are not displayed in any of the key (problematic) areas of the organization  
1 = Codes are displayed in some, but not all the key areas of the organization  
2 = Codes are displayed in all the key areas in the setting |
| | Outcome data  | 0 = Codes are not displayed in any of the key (problematic) areas of the organization  
1 = Codes are displayed in some, but not all the key areas of the organization  
2 = Codes are displayed in all the key areas in the setting |
| | Professional development materials  | 0 = Codes are not displayed in any of the key (problematic) areas of the organization  
1 = Codes are displayed in some, but not all the key areas of the organization  
2 = Codes are displayed in all the key areas in the setting |
| 20. Codes of conduct are linked to key expectations (see item 17) | Task analyses  | 0 = When taught or reinforced, staff do not consistently link the codes with the setting-wide expectations and/or codes are taught or reinforced separately from expectations  
1 = When taught or reinforced, staff consistently link the codes with the setting-wide expectations |
| | Tier 1 walkthrough or staff/supported adult interviews  | 0 = When taught or reinforced, staff do not consistently link the codes with the setting-wide expectations and/or codes are taught or reinforced separately from expectations  
1 = When taught or reinforced, staff consistently link the codes with the setting-wide expectations |
| | Staff handbook  | 0 = When taught or reinforced, staff do not consistently link the codes with the setting-wide expectations and/or codes are taught or reinforced separately from expectations  
1 = When taught or reinforced, staff consistently link the codes with the setting-wide expectations |
## 21. Supported adults and staff are involved in development of expectations and codes of conduct

<table>
<thead>
<tr>
<th>Staff/supported adult surveys, interviews and/or observations</th>
<th>Meeting agendas, minutes and materials</th>
<th>Action plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 = Supported adults/staff were not involved in providing feedback/inputs into the development of the setting-wide expectations and codes</td>
<td>1 = Some supported adults/staff were involved in providing feedback/input into the development of the setting-wide expectations and codes</td>
<td>2 = Most supported adults/staff were involved in providing feedback/input into the development of the setting-wide expectations and codes (i.e. survey, feedback, initial brainstorming session, democratic process etc)</td>
</tr>
</tbody>
</table>

### Critical Element: Recognition Programme Established

<table>
<thead>
<tr>
<th>Reports from recognition systems (e.g. quality of life measures, skills teaching checklists, observational measures)</th>
<th>Staff/supported person handbook</th>
<th>Professional development materials</th>
<th>Tracking (e.g. points, positive observation tools)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 = There is no identifiable recognition programme or a large percentage of staff/supported persons are not participating (less than 50% participation)</td>
<td>1 = The recognition system guidelines and procedures are not implemented consistently because several staff/supported persons choose not to participate, or participation does not adhere to the established criteria (at least 50% participation)</td>
<td>2 = The recognition system guidelines and procedures are implemented consistently across the organization. However, some staff/supported persons choose not to participate or participation does not adhere to the established criteria (at least 75% participation)</td>
<td>3 = The recognition system guidelines and procedures are implemented consistently across organizational settings. Almost all members of the organization are participating appropriately (at least 90% participation)</td>
</tr>
</tbody>
</table>

## 22. A recognition system has elements that are implemented consistently across the organization

<table>
<thead>
<tr>
<th>Tier 1 walkthrough</th>
<th>Staff/supported person handbook</th>
<th>Organisational calendar of events</th>
<th>Tracking (e.g. points, positive observation tools)</th>
<th>Reports from recognition systems (e.g. quality of life measures)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 = The organization employs one set of procedures to reinforce staff/supported persons (i.e. points) or there are no opportunities for people to exchange their points or choose an incentive. Only those that meet set quotas get recognition e.g. people cannot exchange points for smaller incentives</td>
<td>1 = The organization uses a variety of procedures to recognize staff/supported persons, but they do have access to a variety of incentives in a consistent and timely manner.</td>
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<td>Chapter 7</td>
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<tr>
<td>life measures, skills teaching checklists, observational measures</td>
<td>2 = The organization uses a variety of procedures to recognize staff/supported persons (e.g. exchanging points for incentives). There should be opportunities that include tangible items, praise/recognition, and social activities/events. Those with few/many points have equal opportunities to exchange them for incentives. However, more valuable incentives are given to those earning more points.</td>
<td></td>
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</tr>
<tr>
<td>24. Reinforcers are linked to expectations and codes of conduct</td>
<td>Tier 1 walkthrough Staff/supported person handbook Professional development materials Samples of incentives</td>
<td></td>
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</tr>
<tr>
<td>0 = Incentives are provided for behaviours that are not identified in the codes and expectations 1 = Incentives are provided for behaviours that are identified in the codes/expectations but staff/supported persons rarely name appropriate behaviours when giving out incentives 2 = Incentives are provided for behaviours that are identified in the codes/expectations and staff/supported persons sometimes name appropriate behaviours when giving out incentives 3 = Incentives are provided for behaviours that are identified in the codes/expectations and staff/supported persons name appropriate behaviours when giving out incentives</td>
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<tr>
<td>25. Acknowledgements are diverse to maintain staff and supported persons interest</td>
<td>Surveys and/or interviews Tier 1 walkthrough Organisational calendar Tier 1 action plans Meeting agendas, minutes and materials</td>
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<tr>
<td>0 = The incentives are not varied throughout the calendar year and do not reflect staff/supported persons interests 1 = The incentives are varied throughout the calendar year but may not reflect staff/supported persons interests 2 = The incentives are varied throughout the calendar year and reflect staff/supported persons interests (e.g. consider chronological age, gender, culture, developmental age and feedback)</td>
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</table>
26. Ratios of acknowledgements to constructive feedback are high

| Setting-based observations | 0 = Ratio of staff/supported person reinforcement of expectations/codes to constructive feedback for inappropriate behaviours are low (e.g. 1:4) |
| Tier 1 walkthrough | 1 = Ratio of staff/supported person reinforcement of expectations/codes to constructive feedback for inappropriate behaviours are about the same (e.g. 1:1) |
| | 2 = Ratio of staff/supported person reinforcement of expectations/codes to constructive feedback for inappropriate behaviours are moderate (e.g. 2:1) |
| | 3 = Ratio of staff/supported person reinforcement of expectations/codes to constructive feedback for inappropriate behaviours are high (e.g. 4:1) |

27. Staff and supported persons are involved in developing incentives for entire organisation

| Surveys and interviews | 0 = Staff/supported persons are rarely involved in identifying/developing incentives |
| Examples of incentives | 1 = Staff/supported persons are often involved in identifying/developing incentives |
| Meeting agendas, minutes and materials | |
| Action plans | |

**Critical Element: Training plans for teaching expectations/codes of conduct**

28. A competency programme includes teaching expectations and codes of conduct

| Staff/supported person handbook | 0 = Session plans have not been developed or used to teach expectations or codes |
| Master schedule | 1 = Session plans were developed and used to teach codes, but not developed for expectations or vice versa |
| Tier 1 action plans | 2 = Session plans are developed and used to teach codes and expectations |
| Meeting agendas, minutes and materials | |

29. Sessions include examples and non-examples

| Session plans | 0 = Session plans give no specific examples or non-examples or there are no session plans |
| | 1 = Session plans include both examples of appropriate behaviour and examples of inappropriate behaviour |

30. Sessions use a variety of teaching strategies

| Session plans | 0 = Session plans have not been used or do not exist |
| | 1 = Session plans have been introduced using fewer than 3 teaching strategies |
| | 2 = Session plans are presented using at least 3 distinct teaching strategies (i.e. modelling, rehearsal, feedback) |
| 31.   | Sessions are embedded into daily routines | Session plans | 0 = Less than 50% of all staff embed behaviour teaching into daily routines and activities or only occasionally remember to include behaviour teaching  
1 = About 50% of staff embed behaviour teaching into daily routines and activities or embed behaviour teaching fewer than 3 times per week |
|-------|-----------------------------------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 32.   | SMT/staff and supported adults are involved in development and delivery of behavioural development programmes | Surveys and interviews  
Meeting agendas, minutes and materials  
Session plans  
Tier 1 action plans | 0 = SMT, staff and supported persons are not involved in the development and delivery of session plans to teach behavioural expectations and codes for specific settings  
1 = SMT, staff and supported persons are involved in the development and delivery of session plans to teach behavioural expectations and rules for specific settings |
| 33.   | A programme to teach the components of the PBS system to all staff is developed and used | Meeting agendas, minutes and professional development materials  
Staff handbook  
Organisational calendar  
Tier 1 action plans  
Surveys or interviews | 0 = Staff was either not trained or was given the information without formal introduction and explanation  
1 = The team scheduled time to present and train SMT and staff on the procedures and data system, but there were no checks for accuracy of information or understanding OR training did not include all components (i.e. flowchart, referral process, definitions of distressed behaviours, high/low risk, how data is used to guide decision making)  
2 = The team scheduled time to present and train SMT and staff on the procedures and data system including checks for accuracy of information or understanding. Training included all components (i.e. flowchart, referral process, definitions of distressed behaviours, high/low risk, how data is used to guide decision making) |
| 34.   | Plans for training staff how to facilitate teaching of expectations/codes/incentives are developed, scheduled and delivered | Meeting agendas, minutes and professional development materials  
Staff handbook  
Organisational calendar  
Tier 1 action plans  
Staff interviews | 0 = Staff were either not trained or were given the information without formal introduction and explanation  
1 = The team scheduled time to present and train SMT and staff on session plans to teach supported persons/staff expectations and codes but there were no checks for accuracy of information or understanding OR training didn’t include all components (plans to introduce expectations and codes to all supported persons in meaningful ways, explanation of how and when to use formal |
| 35. A plan for teaching supported persons expectations/rules/incentives is developed, scheduled and delivered | Meeting agendas, minutes and professional development materials  
Supported person handbook  
Session plans  
Organisational calendar  
Tier 1 action plans  
Master schedule | 0 = Supported persons are not introduced or supported to learn any of the following: expectations, codes of conduct for specific setting and the incentive system guidelines  
1 = Supported persons are introduced or supported to learn only 1 of the following: expectations, codes of conduct for specific setting and the incentive system guidelines  
2 = Supported persons are introduced or supported to learn only 2 of the following: expectations, codes of conduct for specific setting and the incentive system guidelines  
3 = Supported persons are introduced or supported to learn all of the following: expectations, codes of conduct for specific setting and the incentive system guidelines |
| 36. Booster sessions for supported persons and staff are planned, scheduled and delivered | Tier 1 action plans  
Meeting agendas, minutes and professional development materials  
Professional development calendar  
Session plans  
Organisational calendar  
Master schedule | 0 = Booster schedule for supported persons and staff are not scheduled/planned. Expectations and codes are reviewed with supported persons once a month or less  
1 = Booster sessions are not utilized fully. For example, booster sessions are facilitated for supported persons but not staff; booster sessions are held for staff but not supported persons; booster sessions are not held, but codes & expectations are reviewed at least weekly with supported persons and staff  
2 = Booster sessions are planned and delivered to retrain staff and supported persons at least once in the year and additionally at times when the data suggest issues by an increase in incidents per day per month or a high rate of referrals in a specific setting. Expectations and codes are reviewed with supported persons and staff regularly (at least 1x weekly) |
| 37. Schedule for incentives for the year is planned | Tier 1 action plans  
Staff handbook  
Meeting agendas, minutes and materials  
Organisational calendar  
Master schedule | 0 = There is no strategy for the type and frequency of incentives to be presented throughout the year  
1 = There is a clear strategy for the type and frequency of incentives to be presented throughout the year |
| 38. Plans for orienting incoming staff and supported adults are developed and implemented | Tier 1 action plan  
Staff and supported person handbook  
Meeting agendas, minutes and professional development materials  
Session plans | 0 = Team has not planned for the introduction of setting-wide PBS and induction of new staff or supported persons  
1 = Team has planned for the introduction of setting-wide PBS and induction of either new staff or supported persons, but does not include plans for both OR the team has plans but have not implemented them  
2 = Team has planned for and carries out the introduction of setting-wide PBS AND induction of new staff and supported persons throughout the calendar year. |
| 39. Plans for involving families/community are developed and implemented | Tier 1 action plan  
Staff and supported person handbook  
Meeting agendas, minutes, and professional development materials  
Communications pathway with families  
Organisational calendar | 0 = Team has not introduced setting-wide PBS to families/community  
1 = Team has planned for the introduction and on-going involvement of setting-wide PBS with families/community (i.e. newsletter, brochures, organizational events etc). |

**Critical Element: Evaluation**

| 40. Supported persons and staff are surveyed about setting-wide PBS | Surveys or interviews  
Tier 1 action plans  
Meeting agendas, minutes and materials | 0 = Supported persons and staff are not surveyed  
1 = Supported persons and staff are surveyed at least annually (i.e. items on climate survey or specially developed PBS plan survey) but information is not used to address the setting-wide PBS implementation plan  
2 = Supported persons and staff are surveyed at least annually (i.e. items on climate survey or specially developed setting-wide PBS plan survey) and information is used to address the setting-wide PBS implementation plan |
| 41. Supported persons and staff can identify expectations and rules | Tier 1 walkthrough | 0 = Few supported persons and staff can identify the expectations and rules for specific settings OR evaluations are not conducted (less than 50%)
1 = Many supported persons and staff can identify the expectations and rules for specific settings (at least 50%)
2 = Almost all supported persons and staff can identify the expectations and rules for specific settings (through surveys, random informal interviews etc…at least 90%)

| 42. Staff use the referral and documentation procedures and forms appropriately | High/low risk referral forms and incident records, Outcome measures, Staff surveys | 0 = Few staff know the procedures for responding to unsafe or distressed behaviours, use forms as intended and fill them out correctly OR evaluations are not conducted (less than 50% know/use)
1 = Some of the staff know the procedures for responding to unsafe or distressed behaviours, use forms as intended and fill them out correctly (at least 50% know/use)
2 = Many staff know the procedures for responding to unsafe or distressed behaviours, use forms as intended and fill them out correctly (at least 75% know/use)

| 43. Staff and supported persons use acknowledgement system appropriately | Staff and supported person surveys or interviews, Staff and supported person handbook, Professional development materials, Tracking of reinforcers (points, attendance at acknowledgement events) | 0 = Few staff or supported persons understand and use identified guidelines for the acknowledgement system OR evaluations are not conducted at least yearly or do not assess staff and supported person knowledge and use of the acknowledgement system (less than 50% understand/use)
1 = Some staff or supported persons understand and use identified guidelines for the acknowledgement system appropriately (at least 50% understand/use)
2 = Many staff or supported persons understand and use identified guidelines for the acknowledgement system appropriately (at least 75% understand/use)
3 = Almost all staff or supported persons understand and use identified guidelines for the acknowledgement system appropriately (at least 90% understand/use)

| 44. Outcomes (quality of life, distressed behaviour, social validity) are documented and | Tier 1 action plans, Meeting agendas, minutes and materials | 0 = There is no plan for collecting data to evaluate setting-wide PBS outcomes
<table>
<thead>
<tr>
<th>Implementation Measures</th>
<th>Intervention (outcome) Measures – Adults with ID</th>
<th>Intervention Measures - Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisational Readiness for Implementing Change (ORIC) (Shea et al., 2014)</td>
<td>Engagement in meaningful activity and relationships (EMAC-R) (Mansell &amp; Beadle-Brown, 2005)</td>
<td>Active Support Measure (ASM) (Mansell &amp; Elliott, 1996)</td>
</tr>
<tr>
<td>COM-B setting-wide PBS Interview – adapted from Lambe et al. (2020)</td>
<td>Quality of life – San-Martin Scale (SMS) (Verdugo et al., 2014)</td>
<td>Periodic Service Review (PSR) (LaVigna et al., 1994)</td>
</tr>
<tr>
<td>Training Fidelity Checklist (PSR) (LaVigna et al., 1994)</td>
<td>Distressed behaviour – Aberrant Behaviour Checklist (ABC)(Aman, 2013)</td>
<td>Practice Leadership Questionnaire (PLQ) (Beadle-Brown et al., 2015)</td>
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<tr>
<td>Training evaluation form (staff) (Kirkpatrick &amp; Kirkpatrick, 2016)</td>
<td></td>
<td>Treatment Acceptability (Carter &amp; Wheeler, 2019)</td>
</tr>
<tr>
<td>Setting-Wide PBS Benchmarks of Quality (adapted from Kincaid et al., 2021)</td>
<td></td>
<td>Hierarchical task analysis for skill development (Hignett et al., 2019)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Knowledge tests (training) - (Kirkpatrick &amp; Kirkpatrick, 2016)</td>
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**Table 7.2**

*Relevant Implementation and Intervention Measures for Evaluating Setting-Wide PBS*

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**Stage 4: Full Operation**
Chapter 7

Full function of an innovation can proceed when evaluated outcomes of initial efforts are incorporated into purveyor, organisation and consumer related policies, procedures and practices (Bertram et al., 2015; Fixsen et al., 2005). The intervention transforms into the standard practice in the setting, as evidenced in several school-wide implementations of PBS (Charlton et al., 2020; Cook et al., 2015; Noltemeyer et al., 2019). It is only when fidelity measures are above criterion for the majority of evaluations that the success of the fully operational “destination” can approximate the efficacy of the original “source” – or in this case setting-wide PBS (Fixsen et al., 2005). There is much work to do for setting-wide PBS to reach this stage of the implementation roadmap in adult disability settings. Further research continuing the exploration of implementation in these environments is essential. One potential approach may involve the use of “status checks” early in the implementation process to allow for responsive supports for non or slow responders to intervention (e.g., mobile phone notifications) (Irvine et al., 2012) which may be a novel area for further investigation. Utilising this approach may allow for earlier identification of the need for synchronous or asynchronous coaching in implementation of skills trained during intervention stages. Others have begun testing this approach in early intervention parent training models for toddlers at risk of, or diagnosed with, autism (Alhejailan et al., 2022).

Stage 5: Innovation

Implementation teams gain experience and knowledge of the intervention, and the enablers and barriers to change with every trial (Alblooshi et al., 2020). This presents an opportunity for fine-tuning in respect to the implementation process and the intervention being used, with the identification of useful enhancements and potential threats to validity (Lewis, Schweitzer, Cunningham, & Jacobs, 2020; Winter & Szulanski, 2001). It is essential however that this stage follow the previously described full operation of the practice, so any
innovations
Chapter 7

or developments are based on proficient execution of the intervention (Fixsen et al., 2005). This provides further support for the development of PBS expertise in community disability teams to create an infrastructure for full operation and innovation to emerge. The use of technology is rising as an effective innovation in the field of mental health, with the development of digital mental health interventions (DMHI’s) to increase access to evidence based mental health care (Graham et al., 2020). Technology, such as mobile and web-based apps, have the potential to increase access to evidence-based practices in disability service provision and is an important area for future research (Healy & Dempsey, 2022).

**Stage 6: Sustainability**

The establishment of fully operational setting-wide PBS in adult disability settings will take several years to achieve. Long-term sustainable commitment to implementation is required for vulnerable adults and direct support staff to experience the potential benefits of this model of support. Implementation teams in partnership with the disability community require the proficiencies and attentiveness required to sustain innovative evidence based practices, such as setting-wide PBS, in the context of fluctuating socio-political and financial influences (Fixsen et al., 2005). Short-term quick fix solutions focused solely on individual concerns cannot provide sustainable quality supports for the most vulnerable in our society.

**External Influences – Social, Economic and Political Context**

Funding of disability service provision in Ireland was significantly impacted by the austerity measures imposed following the global financial crisis of 2008 (O’Sullivan & McNamara, 2021). The timing of this was detrimental in the lives of vulnerable adults, as just two years before the UN Convention on the Rights of Persons with Disabilities (CRPD) was adopted (United Nations [UN], 2006). The National Federation of Voluntary Service
Providers
produced a report in 2019 detailing an unprecedented funding crisis in Intellectual Disability services (National Federation of Voluntary Bodies [FEDVOL], 2019). The report describes “a lack of consistency, equity or transparency in how resources are distributed” (p. 1). This crisis has influenced experiences of employees of disability services, who describe disadvantageous pay and working conditions (Power & Burke, 2021). Perhaps this partly explains why many care providers in the state are experiencing significant recruitment issues since the onset of the covid-19 pandemic (Molloy, 2021; Press Association, 2022). These factors are influential at all levels of implementation as commissioners and providers face the challenge of identifying policy interventions that scaffold regulatory requirements, facilitate implementation of evidence-based practices’s that promote quality of life and human rights for vulnerable populations, and minimise barriers to implementation that could squander precious limited resources (Goldman et al., 2001). Investigation of this implementation roadmap for setting-wide PBS could provide an important strategy for commissioners and service providers to navigate this dilemma.
Chapter 8

General Discussion
The National Ability Supports System (NASS) in Ireland reported 36,649 adult service users with an intellectual disability in 2020, a 64% increase from 2019 (Casey, O'Sullivan, Flanagan, & Fanagan, 2020). The report also described the increased need for supports across various services, with the greatest need indicated for specialist supports such as clinical interventions. A recently published report by the Irish government Joint Committee on Disability Matters entitled “Ensuring Independent Living and the United Nations Convention on the Rights of Persons with Disabilities” (CRPD) describes that there is significant inequity in disability service provision in Ireland, and that access to services depended on what area an individual lived in (Joint Committee on Disability Matters, 2022). When budgetary pressures and recruitment difficulties are considered in disability services, together with stringent regulatory requirements, the need for innovation in sustainable, equitable and quality services for the most vulnerable in our population is unmistakable.

The Assisted Decision Making and Capacity (ADMC) Act 2015 provides for legally recognised decision makers to support a person with limited capacity to maximise their decision-making powers and is due to be commenced in Ireland from June 2022 (Department of Justice and Equality, 2015). This is a significant step forward in promoting the human rights of adults with ID in Ireland. The model of positive behaviour support (PBS) emerged from the human rights movement, and the value base of this paradigm pledges to support individuals to achieve a quality of life that is circumscribed by their decisions (Dunlap et al., 2009). While PBS is mandated in Ireland under the Health Act 2007 as an evidence-based practice for vulnerable adults in residential settings experiencing distress, it is not currently considered to be implemented in a consistent manner across service providers, nor is it uniformly available as
evidenced in the Joint Committee on Disability Matters report (Joint Committee on Disability Matters, 2022).

The latest advancement in PBS, setting-wide PBS, is a multi-tiered framework focused on establishing a proactive, positive, and preventable culture of support to enrich quality of life and ease distressed behaviours (Freeman et al., 2005). This systemic focus, while a core component of PBS (Carr et al., 2002), is an under researched aspect of the paradigm in adult services (McGill et al., 2018). Strategic whole organisational approaches are evidenced to reduce the burden of accessing specialised individualised supports (Leitch, Jones, & MacDonald, 2020) which is significant in light of the findings from the NASS report (2020). Furthermore, evidence from educational settings suggests that individually based PBS interventions are unlikely to result in optimal outcomes without the systemic component securely established (Adamson et al., 2019; El Keshky et al., 2020; Grasley-Boy et al., 2020; Martin, 2016).

Setting-wide PBS is a complex intervention, the composition of which often varies depending on the organisation in which it is implemented. One common denominator however in systemic programmes is workforce development or staff training (Allen et al., 2012; Evans et al., 2020; Freeman et al., 2005; Fuchs & Ravoux, 2019; Higgins, 2021; McGill et al., 2018; Reid et al., 2003; Riding, 2016). Building capacities in direct support personnel (DSP) is crucial as they are the direct link between the organisation and the service user. However, translating knowledge and learning into practice change is a notoriously difficult task (Ersek et al., 2012; Lewis et al., 2020; Michie et al., 2005). The investigation of the implementation of complex interventions, such as setting-wide PBS, has become a science in its own right (Atkins et al., 2017; Bauer & Kirchner, 2020; Olswang & Prelock, 2015; Smolkowski et al., 2019). Sustainable and efficient evidence-based frameworks to
enrich the quality of the lives of adults with intellectual
disabilities and improve the quality of supports implemented by social and health care services is a socially, politically, and economically important area of investigation.

The context of implementation is an important factor to consider. Insider action research (IAR) has become recognised as a central means of exploring and changing organisations (Coghlan, 2007; Coghlan et al., 2019; Coghlan et al., 2016). Recently in Ireland, research funding schemes, such as the employment-based postgraduate programme by the Irish Research Council (https://research.ie/funding/ebp/) encourage the advancement of knowledge and skills in industry settings through IAR. The problems identified by IAR practitioners for exploration are often obfuscating and difficult to operationalise and measure (Coghlan et al., 2019). In the present research programme, the lead researcher held the role of behaviour support specialist in the host organisation prior to the commencement of the investigation. The researcher, therefore, had first-hand experience of the challenges faced with managing a referral or reactive based PBS service without a systemic framework to sustain outcomes (Allen et al., 2013; Gore et al., 2013).

Consequently, the current research programme aimed to explore the introduction of setting-wide PBS into an Irish adult disability residential service, with a view to developing a workforce development manual for DSP and an implementation framework that could be adopted by other organisations subsequently. The aims of the research programme were as follows: (1) to conduct a systematic review of the extant literature on systemic applications of PBS in adult settings; (2) to develop a benchmark tier 1 setting-wide PBS workforce development manual and corresponding training for DSP; (3) to use a reliable experimental model and research design to investigate the impact of implementing setting-wide PBS on the quality of life and quality of support of adults with ID, and the skills, knowledge and attitudes of support staff; (4) to explore the barriers and enablers to implementation of
setting-wide PBS for
the DSP that participated in the workforce development programme, and (5) to develop an implementation roadmap for setting-wide PBS in adult disability settings so the findings could be scaled up and examined in future research at regional or state level.

**Contributions of the Current Research Programme and Overview of Findings**

**Overview of Study 1 (Chapter 2)**

The first task of this research agenda was to complete a systematic review of the extant literature examining the application of setting-wide PBS in adult settings. The final analysis included nine studies published between 2000 and 2021, and all included articles involved some form of workforce development programme as a key element of a multi-tiered paradigm.

Positive outcomes for participants with ID, and the staff that supported them, were reported across studies. All included studies described positive outcomes for participants with ID and DSP including improved quality of life, levels of engagement from DSP, skills in DSP and supervisors, reduction in restrictive practices and enhanced social validity or treatment acceptability of intervention components. However, many of these reported outcomes were not empirically analysed and therefore need to be interpreted cautiously. While the results of the implementation of setting-wide PBS in adult settings were promising, the need for future research to adopt more rigorous empirical approaches in examining implementation and impact was clearly evidenced. Furthermore, the limited availability of relevant studies indicated the need for further replication studies to provide greater validity and generalisability to the present findings.

**Overview of Study 2 (Chapter 3)**

The second aim of the research programme was to methodically describe the development of a setting-wide PBS workforce development manual and corresponding
in tier 1 setting-wide PBS for DSP, based on the findings of the previous synthesis and published training standards (Leitch, Jones, & MacDonald, 2020; Positive Behavioural Support (PBS) Coalition UK, 2015; Tomlinson et al., 2017). This further aimed to provide an important gateway in the development of a suite of practical resources to support the widespread adoption and implementation of setting-wide PBS with adult populations with ID. Study 2 mapped the core values of setting-wide PBS to defined PBS competencies and the quality-of-life (QOL) domains for adults with ID. Instructions for delivering the content provided detailed guidance in the use of effective “theory to practice” skill development methodologies of behavioural skills teaching (BST) and hierarchical task analysis (HTA). The Kirkpatrick Model of Training Evaluation (Kirkpatrick & Kirkpatrick, 2016), a recognised standard for evaluating training effectiveness was incorporated to maintain quality in implementation of the content. A series of session plans for each programme module were developed aimed at promoting fidelity in training implementation across individual trainers and organisations. Each session plan included: a) an overview of the module; b) a schedule of delivery; c) a numbered slide list; d) a list of resources, and e) detailed instructions for the trainer. Finally, a checklist was developed for each session to provide a fidelity record for delivery of the programme. This development provided a means for the replication and generalisation of setting-wide PBS workforce development programmes in adult disability settings.

**Overview of Study 3 (Chapters 4 and 5)**

The third focus for the research programme was to adopt an investigative design of adequate strength and rigour to thoroughly examine the effect of systemic and sustainable models of support on the lives of vulnerable adults and those who support them. Accordingly, in this chapter the aim was to examine the impact of tier 1 setting-wide PBS
on direct outcomes
related to adults with ID and DSP in a community-based residential setting in Ireland using a cluster-based RCT design. The manual developed in Chapter 3 would be used to ensure the intervention comprised of quality, evidence-based components. The findings from the synthesis in Chapter 2 indicated that not all studies included outcome data for both adults with ID and their support staff. Therefore, this investigation included both, and examined distressed behaviour and quality of life of adults with ID, and perceptions, knowledge, treatment acceptability and implementation fidelity of DSP. As this research was conducted during the height of the Covid-19 pandemic, considerable methodological challenges were encountered, and were considered to have significantly impacted both the implementation and the outcomes of the study.

Subsequently, a process evaluation describing the challenges, limitations and lessons learned from the investigation were depicted separately, in the ensuing chapter. With respect to outcomes, statistically significant improvements in staff knowledge of setting-wide PBS were detected, however no statistically significant changes in treatment acceptance or attitudes to challenging behaviour in DSP group’s post intervention were found, and equally no significant differences were observed in distressed behaviour or quality of life in service user groups post intervention. Treatment fidelity results indicated that set goals in organisational management achieved the greatest level of implementation, whereas objectives related to skills and capacities of DSP showed relatively low fidelity. Ultimately, the study questioned the suitability and adequacy of the research design for this population group (Hallfors & Cho, 2007; Mulhall et al., 2018; Mulhall et al., 2021) and highlighted the need for further research using a broader range of empirical approaches that focus on implementation of interventions as well as treatment outcomes (Atkins et al., 2017; Hasson, 2010; Hull et al., 2019).
Failure to show statistically significant results gives rise to a range of discussions, relating to such issues of inadequate use of statistical evidence (Aczel et al., 2018), null findings implying a lack of evidence, and a perceived lack of meaningful information, rather than adding any value to extant findings (Leppink et al., 2017). Often, null results are not pursued for publication for these reasons, and this can subsequently result in a lack of available papers for review (Iwachiw et al., 2019). It has been suggested that reporting null results could in fact enhance current research findings (Landis et al., 2014) and give rise to a thorough discussion of real-world practical issues that authors may be somewhat reticent in addressing.

The aim of Chapter 5 was to present a process evaluation of the methodological challenges encountered in the third study. Detailed description and exploration of the challenges faced by a real-world research team during a global pandemic provides essential contribution to the science of implementation, as a troubleshooting guide for future researchers. The conversion of the data collection and training delivery methodologies to online formats, and the subsequent challenges to retain engagement are described. This chapter outlines the study protocol amendments required including the exclusion of the staff coaching and behavioural skills training elements of the workforce development programme, as these were just not possible to execute in the prevailing circumstances. Post-intervention observational data collection protocols that were focused on quality of supports using the Active Support Measure and the Engagement in Meaningful Activity and Relationships (Mansell et al., 2005) instruments were also unavoidably discarded because of imposed pandemic-related restrictions. Challenges related to role duality, the suspension of the setting-wide PBS working group, participant attrition and diminishing implementation fidelity are also described in this chapter. An important contribution of this chapter involves
the final summary of implementation concerns and potential resolutions
based on the extant literature. For example, the challenges regarding organisational involvement could potentially be addressed through enhanced education for leaders in the host organisation (Tomlinson et al., 2017). Complexities in supporting adults with ID to participate fully in the research could be further explored through advances in advocacy and decision-making supports (Maes et al., 2021; Scholten et al., 2021). Finally, the process evaluation stresses the significance of incorporating the models and practices founded in implementation science into the intervention framework of setting-wide PBS for adults with ID in future research.

**Overview of Study 4 (Chapter 6)**

The fourth focal point in the research programme builds from the findings of the process evaluation and RCT, and investigates the use of an implementation science construct, namely the COM-B model (Cane et al., 2012) within a qualitative research design, where researcher existing knowledge and understanding of the field is an advantage rather than a potential source of bias (Braun & Clarke, 2013). This model proposes that at any given juncture, a specific behaviour would occur only if the individual concerned has the Capability, Opportunity and Motivation to engage in that action (Michie et al., 2011). The COM-B model has been widely used to examine facilitators and barriers to practice change across health care environment (Boyd et al., 2020; Cassidy et al., 2018; Lambe et al., 2020), however it does not yet appear to have been employed for examining implementation of PBS in adult disability settings. The aim of this study was to use the COM-B model as a conceptual framework to examine the facilitators and barriers of a workforce development programme in setting-wide PBS in a disability service organisation through semi-structured interviews with DSP and social care managers. An adapted semi-structured interview schedule was developed for this study, an
important contribution for further investigation of implementation of setting-wide PBS in adult settings. Results reflected that the
participants experienced the workforce development programme as beneficial and believed it should be a requirement for staff working in the sector. Participants stated that the incorporation of setting-wide PBS components into existing practices was an enabler for behaviour change.

The systemic components of the framework were identified as essential for the adoption and dissemination of learning into practice in the host organisation through culture change. Furthermore, participants recognised the value of positive relationships between DSP and supported adults with ID as a key enabler for practice change. Inconsistencies in the skills and values of DSP was identified by participants in multiple domains as a barrier to practice development, specifically linking this to resistance to change and poor implementation fidelity. High workloads, time constraints, limited staff ratios and redeployments were identified as obstacles by staff. Most participants identified the online delivery of training as a barrier to behaviour change, expressing a preference for face-to-face learning conditions.

The findings of the study indicated considerable investment in the development of quality training materials and equipment, and in the formulation of staffing ratios, is required to safeguard the quality and efficacy of future capacity development programmes. The importance of consistency in core teams to safeguard relationships between professionals and supported adults (Fulford & Cobigo, 2018), and the role of leadership and mentoring in quality practice (Beadle-Brown et al., 2015; Hume et al., 2021) is plain. Outcomes in this study support the findings of the previous studies in this research programme, that funding commissioners need to move past reactive models of support and concentrate on evidenced sustainable models of service provision and workforce development to achieve demonstrable constructive outcomes for the most vulnerable in our society.

Overview of Study 5 (Chapter 7)
The final stage in the research programme was designed to produce an implementation roadmap for setting-wide PBS in adult disability settings through the application of an implementation science conceptual framework (Fixsen et al., 2005). A significant finding of this research programme, which supports previous investigations, is that implementation of innovation involves sustained commitment, and must be considered as a process rather than an event (Fixsen et al., 2005; Hasson, 2010). First, the need to establish professional training and accreditation avenues for purveyors of setting-wide PBS, such as behavioural psychologists or equivalent is posited. Clinical psychology and applied behavioural analysis postgraduate programmes in Ireland and abroad consist of professional training programmes where psychologists in training attend universities for the academic portion of their development, and complete rotations in healthcare, social care and educational settings for experiential learning (Carr, 2015; Leslie & Tierney, 2013). A similar professional training approach might be developed for the field of positive behaviour support and applied behavioural science to ensure that adequately skilled practitioners are available. The stages of implementation outlined by Fixsen et al. (2005) were then used to understand and frame the findings from the research programme. A summary of practical tools is provided in this chapter which may be considered an important quick reference guide for practitioner-scientists to further explore the application of setting-wide PBS in adult settings.

The significance of producing a pragmatic future roadmap for disability organisations to implement this evidence-based practice in the context of limited budgets, regulatory requirements and staffing limitations cannot be undervalued. Investigation of the use of this implementation roadmap and related resources such as the workforce development manual described in Chapter 3 may be considered important areas for future research.

*Theoretical Implications of the findings*
Relational aspects of care have received diminutive focus in the body of literature examining positive behaviour support to date. While “knowing the person” is an identified component in the published PBS training standards (Tomlinson et al., 2017), this construct is not named as a defining feature of PBS in the most recent definition of PBS by Gore and colleagues (2022). The findings of the present study identified compassionate care as a significant enabler for behaviour change in the day to day practice of direct support staff, and outcome supported by other studies (Hastings, 2005; Hollins & Steckley, 2020; Totsika et al., 2011). Current research in relational aspects of care in other spheres posit the concept of ensembles, or partnerships to explore responsibilities of the various stakeholders involved in the dynamics of care provision, and to capture both the relational and contingent properties of residential service provision (Martin-Matthews & Torrejón, 2022; Nash-Patel et al., 2022). This is reflective of the emergent literature exploring co-production and participatory action in intellectual disability research (Acton et al., 2022) and in emergent literature in behavioural interventions (Davis et al.; 2022; Ramage et al., 2022). Future research exploring whether the relational aspects of care warrant inclusion in the conceptual framework of PBS, and the use of methodologies that are considerate of the relational aspects of care are noteworthy themes. Finally, the dovetailing of the setting-wide PBS framework with conceptual constructs and methodologies from implementation science is a significant innovation in the current theoretical understanding of this model of practice.

**Practical Implications of the findings**

The findings of the present research agenda provide important practical inputs to the expanding sphere of setting-wide PBS in adult ID settings. The workforce development manual from Chapter 3 is a practical instrument that offers the potential to replicate implementation of tier 1 universal positive behaviour supports at scale. Furthermore, the design of the manual
allows for incorporation of contextual factors such as specific practice development goals in the specific setting employing the manual which is an important practical feature. The scalable implementation roadmap and accompanying toolkit of resources (including the COM-B interview schedule) provides a) an expedient means of future researchers/practitioners to further the practical exploration of this model at larger units of analysis; and b) a means to embed a quality improvement mechanism in the implementation framework for organisations.

**Strengths of the research programme**

*Research with Adults with ID*

Empirical research exploring the impact of interventions in the lives of adults with intellectual disabilities, especially those with moderate to profound diagnoses, is notoriously difficult to assume (Mulhall et al, 2018; Doody, 2018). This research provides important new findings to the limited available articles conducting experimental analysis with this vulnerable population group. In the process however, the findings also provide further support for the case of adopting research designs better suited to the investigation of complex behavioural interventions (such as observation-based designs and studies focused on examining the process of implementation) in current and future research.

*Research at larger units of analysis*

Investigation of the implementation of PBS at larger units of analysis has recently been identified as a crucial focus area in a state of the national report by Gore and colleagues (2022). The present programme provides exactly this, along with several in-depth explorations using mixed methodologies to identify what was effective and why, and perhaps more importantly, what didn’t work and what could be done differently in the future based on the available scientific knowledge of implementation. The use of mixed methodologies in this programme allowed for a fuller and deeper understanding of the implementation and impact of setting-wide
PBS with this population group.

Adversity

Finally, as this research programme was undertaken during a global pandemic, both the participants of the programme and the research team overcame significant adversity to bring the findings of this investigation to the field. The widespread amendments to the research and implementation protocols necessitated, destined that the programme inescapably deviated from the original plan. The produced thesis arguably offers more to the field of PBS in the knowledge and experienced gained in facing these challenges.

Study limitations and areas for future research

The psychological, social, and occupational demands of completing an extensive research programme while working in a social care setting during these extenuating circumstances were considerable (Liu et al., 2022). The next segment expands on these limitations and their implications for future investigation.

Engagement and commitment to change

Concerns with substandard organisational buy-in, attrition, low attendance rates and redeployments as limitations are described throughout the research programme. This is similar to the current challenges faced by adults with ID in accessing quality disability service provision (Joint Committee on Disability Matters, 2022; Murphy, 2020; Press Association, 2022). A leadership education component (Leitch, Jones, & Triantafyllopoulou, 2020; Tomlinson et al., 2017) combined with an organisational readiness for change (ORIC) measure (Shea et al., 2014) at the onset of the implementation pathway is an important first step in future applications of the framework in applied settings. Petitioning commissioners to invest in sustainable workforce development programmes could serve to address difficulties with DSP attrition and redeployment.
Chapter 8

**Research Design**

Randomised controlled trials (RCT’s) are widely held as the ‘gold standard’ for investigating the impact of treatment interventions (Rajasekar & Kumar, 2019; Webber & Prouse, 2018). This programme, along with several others indicates that RCT frameworks, while excellent for testing the efficacy of pharmacological interventions, may not be the most suitable or adequate option for examining the impact of behavioural interventions due to the multifaceted interactions between people under real-life conditions (Ersek et al., 2012; Mulhall et al., 2018). Alternative methodological approaches such as mixed methods design (Bowers et al., 2013) and repeated acquisition design features (RAD) (Kirby et al., 2021) could be considered as options in future research endeavours. A further possibility to be explored in relation to designing future research includes consideration of the Sequential, Multiple Assignment, Randomised Trial (SMART) (Lei et al., 2012). This is an experimental approach that has shown some utility in building adaptive interventions. Typically, the SMART can employ multiple stages of randomisations whereby different stages in the research protocol correspond to the selection and/or adaptation of intervention options. Utilising frequently embedded “status checks” and decision points on participant outcomes during the early and subsequent stages of intervention informs adaptations to second and third stages of the intervention. For example, Kasari and colleagues (2014) successfully used this design to investigate communication interventions for minimally verbal children with autism. Employing a SMART design in real world contexts such the focus of the current research programme, may allow for a type of cascading adaptive intervention, whereby non-responders are re-randomised with equal probability to second-stage augmentation interventions. In this way, the effects of first and second-stage interventions can be compared, and moderators of outcomes analysed. This type of design
may be considered by future researchers to deal with the kinds of challenges posed when examining research questions in applied settings. It may also provide an insight into future ways to improve rigorous examination of real-world applications of empirically supported behavioural approaches.

**Implementation and sustainability**

An often-underestimated factor when instigating a compound intervention is that the complexities of implementation can far outweigh the intricacies of the specific innovations being put into place (Hull et al., 2019; Olswang & Prelock, 2015; Skouteris, 2021). This was certainly the experience in the present research programme. Bookshelves of intervention handbooks do not necessarily transform to innovative practice or change in human service systems (Bertram et al., 2015; Fixsen et al., 2005). Foregoing investigations of the establishment of systemic models of PBS in adult settings showed promising outcomes for adults with ID and DSP (Evans et al., 2020; Higgins, 2021; McGill et al., 2018). Some of the features of those programmes that were lacking in the present study include behavioural skills training, coaching, and the involvement of a PBS leadership team administering the rollout of the intervention in the host organisation.

Furthermore, the inclusion of a systemic implementation fidelity measure such as the adapted Benchmarks of Quality assessment tool (Kincaid et al., 2021) detailed in Chapter 7 may have helped to tackle some of the implementation challenges encountered. Positive outcomes for consumers, in this case adults with ID and the staff that support them, should not be expected, or used as a quality outcome measure until adequate criterion fidelity scores are reached (Bertram et al., 2015; Fixsen et al., 2005; Lewis et al., 2020). Long-term sustainable commitment to implementation of setting PBS is required for vulnerable adults and direct support staff to experience the potential benefits of this model of support.
Final Conclusions

Despite the considerable limitations experienced in the present research programme, the model of setting-wide PBS provides a promising solution to the many challenges faced by commissioners and providers of disability services for adults in Ireland. With the commencement of the Assisted Decision Making and Capacity Act (ADMC) in June of this year, and the recent
publication of the Report on Ensuring Independent Living and the CRPD (Joint Committee on Disability Matters, 2022) there is an opportunity to petition for innovation in how services are provided and how limited funding budgets are utilised. The distinctive and key contributions of this research programme is the development of a setting-wide PBS implementation roadmap for adult settings, a tier 1 setting-wide PBS workforce development manual for DSP, and supplementary resources such as the core set of hierarchical task analysis checklists (HTAs) for competency development in DSP. Further investigation is imperative to test these contributions at scale. Staff participants in this programme concurred that the intervention was meaningful, and important, for all staff working in direct support and supervisory roles that provide services for vulnerable adults in our communities. Future inclusive research exploring implementation of PBS with and by adults with ID, though procedurally and ethically exigent, is key if PBS is truly a person-centered rights-based paradigm.
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